

Australian Capital Territory

# Heritage (Decision about Registration of Cotter Caves and Surrounds) Notice 2011

Notifiable Instrument NI 2011 – 112

made under the

## *Heritage Act 2004* section 42 Notice of Decision about Registration

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### 1. Revocation

This instrument replaces NI 2010 – 332

### 2. Name of instrument

This instrument is the Heritage (Decision about Registration for Cotter Caves and Surrounds) Notice 2011 -

### 3. Registration details of the place

Registration details of the place are at Attachment A: Register entry for the Cotter Caves and Surrounds.

### 4. Reason for decision


The ACT Heritage Council has decided that the Cotter Caves and Surrounds meets one or more of the heritage significance criteria at s 10 of the *Heritage Act 2004*. The register entry is at Attachment A.

### 5. Date of Registration

10 March 2011

Gerhard Zatschler  
Secretary  
ACT Heritage Council  
10 March 2011

Attachment A

 <p>ACT Heritage Council</p>	<p><b>AUSTRALIAN CAPITAL TERRITORY</b></p> <p><b>HERITAGE REGISTER</b> <b>(Registration Details)</b></p> <p><b>Place No:</b></p>
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*The following is mandatory:*

For the purposes of s. 41 of the *Heritage Act 2004*, an entry to the heritage register has been prepared by the ACT Heritage Council for the following place:

**Cotter Caves and Surrounds**, part Blocks 47 and 322 Paddys River District.

**DATE OF REGISTRATION:** 10 March 2011

**Notified:** 11 March 2011    **Notifiable Instrument:** 2011 –

Copies of the Register Entry are available for inspection at the ACT Heritage Unit. For further information please contact:

The Secretary  
ACT Heritage Council  
GPO Box 158, Canberra, ACT 2601

Telephone: 13 22 81    Facsimile: (02) 6207 2229

## IDENTIFICATION OF THE PLACE

The Cotter Caves and Surrounds comprise of part of Blocks 47 and 322 Paddys River District.  
(35° 20' 08" S, longitude 148° 56' 21" E)

### **Description of Boundary-**

The boundary for this nomination is based on recommendations by Davey *et al.* (1993). The boundary largely conforms to existing road networks that provide a readily identifiable perimeter and enclose a practical management zone.

<b><u>Boundary Description</u></b>	<b><u>Reason for boundary definition</u></b>
Paddys River forms most of the northern and the whole eastern boundary of the nominated area.	The river provides a distinct natural boundary.
Following the northern boundary from east to west along the river, the boundary line moves southwest to the intersection with the boundary of the Bullen Range Nature Reserve	This intersection point marks the catchment boundary on the spur of the ridge running north-south.
Then following the four wheel drive road northwest, southwest then south	This includes the catchment boundary that runs along the spur of the ridge and a buffer to the west of this catchment boundary.
Then turning southeast following the four wheel drive road.	This boundary line falls on the southern side of the catchment boundary so that the head of the creek that drains past the mine workings and caves is included in the nominated area. This will provide a buffer and ensure that the direct hydrological connections that are likely to exist within the caves are respected in all surface management.
Then turning north following the four wheel drive road until it intersects with the reserve boundary, following this east to the corner of the reserve boundary, then following the drainage line to the river.	This boundary is based on recognisable landforms to define the nominated area and to include adit no. 3 (furthest to the east, not marked on boundary map - see map entitled 'Cotter Caves and Surrounds').

The 'Cotter Caves and Surrounds' includes part of the currently reserved area of the Bullen Range Nature Reserve (including part of the Murrumbidgee River Corridor). A small part of the area falls outside the nature reserve into land managed for plantation forestry (See map entitled 'Cotter Caves and Surrounds').

## STATEMENT OF HERITAGE SIGNIFICANCE

This statement refers to the Heritage Significance of the place as required in s12(d) of the *Heritage Act 2004*.

The 'Cotter Caves and Surrounds' is the most extensively documented mineralogical site in the ACT and demonstrates unusual natural history features. The limestone caves are the only accessible caves in the ACT.

The site includes several geological features, notably a contact zone between a large granite intrusion and slightly older rocks of the Paddys River Volcanics; a limestone lens forming a prominent ridge south of the river; a well developed magnetite-rich skarn deposit; the presence of more than 83 types of minerals in the skarn outcrops and an additional 18 minerals documented from the cave deposits (McQueen *et al.* 1988, 1992).

The caves and mines precinct is recognised as one of the small number of geological monuments in the ACT and the area has also been designated the type locality for the Paddy's River Volcanics.

The relationships between the caves and mines and the terrain and geomorphology is demonstrated in a small area. The deposit has significance for research particularly for understanding the development of secondary minerals during weathering and dispersion of minerals and elements. It is also an important educational site because of the variety of distinctive rock types at the site and the presence of the skarn deposit and mineralogy.

The caves are of interest for their cave fauna.

In the vicinity of the caves are the locations of two populations of the rare herb Mountain Cress (*Drabastrum alpestre*). These are the only known populations of this species in the ACT.

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## FEATURES INTRINSIC TO THE HERITAGE SIGNIFICANCE OF THE PLACE

The features intrinsic to the heritage significance of the Place and which require conservation comprise:

- Limestone caves known as the Cotter Caves. These are the only accessible caves in the ACT.
- The geomorphology of the area that reflects pronounced erosional down-cutting of regional drainage patterns. Upstream from the Place, Paddys River has formed a deeply incised valley that is actively eroding. Outcrops of magnetite skarn (a mineral deposit) form a small peak and ridge with the skarn mostly occurring on the steep eastern side of the ridge (See Figure 1).
- The geological and associated mineralogical features of the Place are highly visible. The location is a contact zone between a large granite intrusion and slightly older rocks of the Paddys River Volcanics. A limestone lens forms a

prominent ridge south west of the river; on its south-western side this is in contact with a well-developed magnetite-rich skarn deposit. More than 83 types of minerals occur in the area.

- A series of old mines in the area, that are now largely collapsed but that show a colourful history of prospecting. There are numerous shallow pits and remains of three adits.
- The main cave (PR1) (See Appendix A) that once provided the only known habitat in the ACT for a colony of the Eastern Bent-Wing Bat (*Miniopterus schreibersii*) and associated invertebrate fauna.
- Cotter Cave (PR1) as it is the type locality for the cave dwelling spider *Epimecinus* sp. nov.
- The occurrence of the relatively rare herb Mountain Cress (*Drabastrum alpestre*) in two locations within the area surrounding the caves.

**Sensitive Information** – To avoid disturbance, the specific locations of the Mountain Cress (*Drabastrum alpestre*) should not be made available except to relevant persons in the field.

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## REASON FOR REGISTRATION

The Cotter Caves and Surrounds has been assessed against the heritage significance criteria and been found to have heritage significance when assessed against three criteria (i, j, l) under the ACT Heritage Act.

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## ASSESSMENT AGAINST THE HERITAGE SIGNIFICANCE CRITERIA

Pursuant to s.10 of the *Heritage Act 2004*, a place or object has heritage significance if it satisfies one or more of the following criteria. Significance has been determined by research as accessed in the references below. Future research may alter the findings of this assessment.

- (i) it is significant for understanding the evolution of natural landscapes, including significant geological features, landforms, biota or natural processes

The Place contains several important and unique geological and mineralogical features that demonstrate elements of the evolution of the Canberra landscape. Significant among these are: the area's location at a contact zone between a large granite intrusion and slightly older rocks of the Paddys River Volcanics; a limestone lens forming a prominent ridge south of the river; and a well developed magnetite-rich skarn deposit with more than 83 types of minerals present. The caves and mines precinct have been recognised as one of the small number of geological monuments in the ACT

and the area has been designated the type locality for the Paddys River Volcanics.

- (j) it has provided, or is likely to provide, information that will contribute significantly to a wider understanding of the natural or cultural history of the ACT because of its use or potential use as a research site or object, teaching site or object, type locality or benchmark site

More than 83 minerals have been identified in skarn outcrops, with an additional 18 minerals documented from cave deposits (McQueen et al. 1988, 1992). It is the best documented mineral locality in the ACT and contains a number of rare minerals in a uniquely preserved setting. The weathered skarn provides the opportunity for further research, particularly on secondary mineralogy and weathering processes.

The relationship between the terrain, geomorphology, cave genesis and historical mining activities are clearly demonstrated within a small area and therefore have the potential to provide educational experiences for a wide range of programs.

Cotter Cave PR1 is the type locality for the cave dwelling spider *Epimecinus sp. nov.* (Gray 1973).

- (l) for a place it is a significant ecological community, habitat or locality for any of the following:

- (ii) rare, threatened or uncommon species;

The area contains the only known occurrence in the ACT of the Mountain Cress (*Drabastrum alpestre*) This is of major significance more broadly, as there are only 2 other locations in south eastern Australia (NSW and Victoria) where this species occurs. The species is listed as threatened in Victoria.

The Cotter Cave is the only known natural roost in the ACT for the Eastern Bentwing Bat (*Miniopterus schreibersii*), which is a declared vulnerable species in NSW and the ACT.

The following criteria were found not to be applicable: a,b,c,d,e,f,g,h,k,l(i)(iii)(iv).

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## **SUMMARY OF THE PLACE HISTORY AND PHYSICAL DESCRIPTION**

The Place contains a number of important and unique geological and mineralogical features (Owen and Wyborn 1979, McQueen et al. 1988). The caves and mines precinct has been recognised as one of the small number of geological monuments in the ACT (Owen et al. 1988). The area has been designated the type locality for the Paddy's River Volcanics (NCDC, 1988).<sup>1</sup>

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<sup>1</sup> For definition of the geological unit and description of the type section, see Owen, M., Wyborn, D. (1979) Geology and geochemistry of the Tantangara and Brindabella 1:100 000

The geomorphology of the area reflects the underlying bedrock geology and pronounced erosional down-cutting of regional drainage patterns. Near and upstream from the area, Paddys River has formed a deeply incised valley or gorge and is actively eroding its bed. Outcrops of magnetite skarn form a small peak and ridge with most of the skarn outcropping on the steep eastern side of the ridge.

The Cotter Caves are in an outcrop that exhibits the best developed karren (surface solution sculpture) in the ACT. Even though the Cotter Caves are small and there are many of this type in the wider region, these are the biggest and only accessible caves in the ACT. There are three main caves, two other very small caves and an intermittently active karst hydrological system<sup>2</sup> at the site. The caves demonstrate underground karst features where underground drainage and erosion of limestone has formed caves.

The Cotter Caves (PR1) once provided the only known habitat in the ACT for a colony of the Eastern Bent-Wing Bat. During the 1930s-1950s bats were always present during cave inspections. Visitor disturbance and gating of the cave entrance (which interfered with the bat sonar and deterred or prevented entrance to the caves) led to a decline and bat sightings are now infrequent. An associated decline in invertebrate fauna has occurred due to a decline in bat dung (guano) as a food source. During the nineteen seventies bats were quite common in a small high level chamber at the inner end of PR1 and a few bats still frequent the cave as evidenced by occasional sightings and fresh guano on the cave floor (pers comm. John Brush – Speleological Society ACT). It is anticipated that if visitor disturbance can be managed and gating modified that the cave-dwelling bats may again return to the site.

Due to the decline in bats there has been an associated decline in the invertebrate fauna in the cave ecosystem. Bat guano (accumulation of dung often partly mineralised) previously provided the energy source for these invertebrates. Surveys in 1993 recorded spiders, harvestmen, beetles and booklice as well as other species. In 1973 Gray recorded the presence of a previously unrecorded species of spider *Epimecinus* sp.nov. that is believed to be endemic to the site, however, it is unknown whether this species still occurs here. The spider *Stiphidion facetum*, often encountered in cave entrances in southeastern Australia, was also found in the caves.

Two populations of the rare herb Mountain Cress (*Drabastrum alpestre*) occur in the south-western corner of the precinct (latitude 35° 20' 09" S, longitude 148° 56' 21" E (upper slope) and latitude 35° 20' 05" S, longitude 148° 56' 24" E (lower slope). These are the only known populations of this species in the ACT. Mountain Cress is a small perennial herb with a woody base and rhizome with stems usually between 15-30 cm high. The leaves are usually in a basal rosette. Flowers are white or lavender, 7-12 mm across with up to 30 arranged in a dense raceme (flower spike). Flowering occurs from August to February (Briggs and Leigh 1985).

There are two patches of Mountain Cress about 100 m from one another, occurring on soil derived from magnetite skarn rock as parent material but it is not known whether this is a habitat requirement or coincidental link. This location is one of only 3 known in Australia (others in NSW and Victoria – Kosciusko National Park and

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Sheet areas, New South Wales and Australian Capital Territory, Bureau of Mineral Resources, Australia, Bulletin, 204.

<sup>2</sup> Landforms and drainage characteristics occurring due to greater solubility of certain rocks (limestone or marble in this case).

Wonnangatta-Moroka National Park respectively) making these ACT populations very important. The species is listed as threatened in Victoria.

The number of Mountain Cress plants counted by Wildlife Research and Monitoring (Parks, Conservation and Lands) in each population are as follows: in 2005 upper population - 48 plants; lower population - 119 plants (total - 167 plants) and in 2004 upper population – 74 plants; lower population – 68; total (142 plants).

Disturbance to the site by exploratory mining may have eliminated some of the Mountain Cress from its original distribution. The species survives on the mid-slopes as scattered plants in areas that have been least disturbed by mining activity (Briggs and Leigh 1985). Management to prevent disturbance to the site is important to conserve this species including management of encroachment by weeds, prevention of impacts from activities in the pine plantation and reduction of site visitation and foot and trail bike traffic.

The 'Cotter Cavers and Surrounds' includes steep and rocky terrain that is vigorously regenerating with native species after the area was badly burnt by the 2003 fires. It is generally in good ecological condition and displays a high diversity of native species. Native species include *Eucalyptus rossii*, *E. polyanthemos*, and *E. viminalis* as well as acacias, *Bursaria* sp. and River She-oak (*Casuarina cunninghamiana*) occurring on the bank of Paddy's River. There is also a large area of the native shrub *Pomaderris subcapitata* regenerating near the mine area (latitude 35° 20' 08" S, longitude 148° 56' 21" E). The area contains some weed infestations, mainly St Johns Wort but there is little in contrast to the surrounding area that was previously planted to pine. The *Drabastrum alpestre* populations that occur on the rocky skarn deposits on the north facing slopes are described in further detail below.

Old mine workings and related structures are preserved at the site. Upper exposures of the skarn deposit contain a number of shallow workings, including pits and trenches that explored the weathered and oxidised surface of the deposit. Down slope (east) from these there is a small adit (no.1) which was constructed during the earliest period of mining. A second adit (no.2) is located further south. Both these have tailings adjacent to them and adit no. 2 has some light rail line near its entrance. A third and much more extensive adit was driven into the deposit from a position just above Paddys River and is approximately 250m east of the deposit. Remains from the era that were present at the site in 1993 are documented in Davey *et al.* 1993 (p-17-18).

The area contains a number of important and unique geological and mineralogical features (Owen and Wyborn 1979, McQueen *et al.* 1988). The area is located at the contact zone between a large granite intrusion (Shannons Flat Adamellite) of late Silurian age and slightly older rocks of the Paddys River Volcanics. A limestone lens forms a prominent ridge south of the river (NCDC, 1988). Within the site there is a well developed magnetite-rich skarn deposit which formed when fluids from the intruding granite reacted with a limestone lens and enclosing tuffs within the Paddys River Volcanics. More than 83 types of minerals have been found in this area, some of these are classified as rare or unusual (McQueen *et al.* 1988, 1992). Along from the skarn, the northern section of the original limestone lens is preserved as a body of marble and recrystallised limestones. Solution weathering of the marble has produced several small caves. Some fossils have also been found in these limestones.

The geomorphology of the area reflects the underlying bedrock geology and pronounced erosional down cutting during the Tertiary period of the upfolded block west of the Murrumbidgee River. Regional drainage patterns are also partly controlled by some of the large faults in the area and joint sets in the granites. Near and upstream from the area, Paddys River has formed a deeply incised valley or gorge and is actively eroding its bed. Nick points and terraces in the topography



indicate palaeodrainage levels. Outcrops of magnetite skarn form a small peak and ridge with most of the skarn outcropping on the steep eastern side of the ridge.

The three caves were described by Nicoll and Brush (1975) and another two were discovered during the study by Davey *et al.* 1993. Nicoll and Brush described Cotter Cave PR1, Powder Store Cave PR2 and Blasted Cave PR3. Pronounced cleavage and intensity of bedding have markedly influenced the form of Cotter Cave and to a lesser extent Powder Store Cave. The dip of the limestone is near vertical along a strike from northwest to southeast making the walls of the Cotter cave vertical and along strike.

## References

Barz, R.K. & Winston-Gregson, J.H. (1982) Murrumbidgee River Corridor 2: the second part of an archaeological survey for the NCDC. Unpublished consultant report.

Briggs, J.D. and Leigh, J.H. (May 1985) Delineation of Important Habitats of Rare and Threatened Plant Species in the Australian Capital Territory – A National Estate Grants Project, Final Report, CSIRO Division of Plant Industry, Canberra.

Davey, A.G, Egloff, B, McQueen, K.G, & Spate, A.P, (1993) Proposed Conservation Plan, Paddys River Caves & Mine Precinct, Bullen Range Nature Reserve, Murrumbidgee River Corridor & Pierces Creek Forest, ACT – A Report to ACT Forests, Applied Ecology Research Group, University of Canberra.

Gray, M.R. (1973) Survey of the spider fauna of Australian caves, *Helictite* 11:47-75

McQueen *et al.* (1988) Primary and Secondary Minerals at the Paddys River Mine, Australian Capital Territory, *Australian Mineralogist* 3:83-100.

McQueen *et al.* (1992) Additional Minerals at the Paddys River Mine ACT; an update, *Australian Mineralogist* 6 (2).

NCDC, *Sites of Significance in the ACT, Volume 7, Paddys River and Tennent Areas,* Technical Paper 56, NCDC, February 1988

Nicholl, B. and Brush, J. (1975) Paddys River (Cotter) Caves. *The Very Latest (Canberra Speleological. Society News.)* 7(3):3-8.

Owen, M. and Wyborn, D. (1979) *Geology and geochemistry of the Tantangara and Brindabella 1:100,000 Sheet Areas, New South Wales and ACT,* Bureau of Mineral Resources Bulletin 204.

Owen, M. *et al.* (1988) *Geological Monuments in the Australian Capital Territory.* Report by the Monuments Subcommittee, Territories Division, Geological Society of Australia, for the Australian Heritage Commission.

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## NON-STATUTORY BACKGROUND INFORMATION

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The mining remains have cultural and historic value as they show the activity of individuals working the mines rather than that of a large enterprise. Early mining exploration has not been obliterated by later mining activity, which is often the case elsewhere (Barz & Winston-Gregson 1982). The old mine workings represent an important part of our local heritage, particularly as they are the best known and most accessible example of early prospecting and mining activities in the ACT. These date back to the early pioneering period of development in the local region when prospecting and small scale mining often occurred alongside farming and grazing. It was common during rural depression for landholders, itinerant workers and local businessmen to engage in prospecting and mining.

### ***Settlement and Grazing***

The area was settled later than the eastern side of the Murrumbidgee River where runs were apportioned by the NSW Government in the early 1930s. However, land on the west was being occupied illegally by squatters at this time. The Cunningham family moved onto the Congwarra run in the Tidbinbilla valley in 1844-45 when there were probably only a few sheep herder's huts in the valley. The junction of the Paddys and Cotter Rivers was at the far north eastern part of the run. Grazing occurred in the area at this time.

### ***Mining***

Continuous fossicking occurred throughout the district by sheep herders searching for ore deposits but it was not until the late 19th century that the Paddys River skarn deposit was mined. The deposit contains small quantities of copper, lead, zinc, silver and gold. The first official record of prospecting and mining at the site was in 1896 when Thomas Cole extracted quantities of copper and silver worth £225 at the time. Copper prospecting by a syndicate within the next few years has also been reported to have extracted "fair prospects".

Between 1907 and 1909 the deposit was tested by the Cowley Copper Development Syndicate but results of this work were generally disappointing. Other mining companies also investigated the site in 1946 and 1951 but insufficient minerals and difficulty in obtaining a lease meant that these were not followed up. Further investigations occurred in the 1950s seeking magnetite for coal washing and in 1960 the then Bureau of Mineral Resources tested for iron and silica.

### ***Caves***

Tours of the caves occurred every Sunday between the 1930s and the 1950s as a commercial operation run by Stan Margules. At that time wooden steps led down to the caves and entry was via a trap door. These steps were rebuilt in the 1960s by City Parks (the Government management agency at the time). These were largely destroyed by the 2003 bushfires and have now been removed. Stalactites and other features in the caves have been broken through the years with archaeological excavations finding bits of broken stalactites in the Cotter Cave and broken cave coral in the Powder Store Cave. There is considerable graffiti on the walls of the cave that dates back to the early years of the 20th C through to the present. A series of gates and fences have been installed over past decades to protect the caves and to provide for the safety of the increasing number of visitors from the nearby Cotter

Reserve. These have been ineffectual, highly unaesthetic and have not allowed entry to bats.

***Forestry***

In the 1960s part of the area was fenced to exclude rabbits. No pines were planted in the immediate vicinity of the caves and mine area. This was probably due to the skarn outcrop that occurs on the ridge above the mine which was not planted with pines although it was in a plantation coupe. This allowed survival of the rare plant *Drabastrum alpestre* at the site.

## APPENDIX A



View north from main Cotter Cave.



View south from main Cotter Cave showing the hill face that contains some of the mine shafts.



Entrance to main Cotter Cave



Main Cotter Cave



Site of upper population of *Drabastrum alpestre*.



*Drabastrum alpestre*