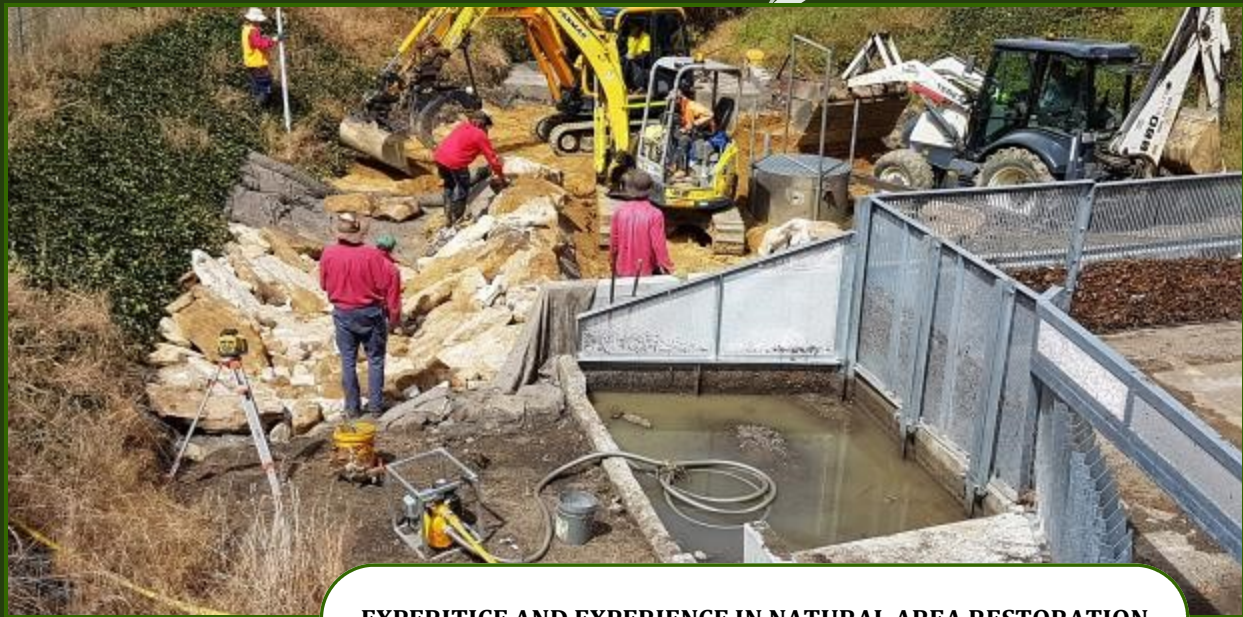


the bushdoctor
(nsw) Pty Ltd



EXPERITICE AND EXPERIENCE IN NATURAL AREA RESTORATION

Offering comprehensive environmental management solutions



ENVIRONMENTAL MANAGEMENT

Company information

The Bush Doctor (NSW) Pty Ltd is a bushland regeneration contractor and consultant focussed on delivering effective environmental outcomes. We are based in the Blue Mountains in NSW, Australia.

The company's expertise lies in the fields of bushland regeneration, soil and erosion control, Swamp Restoration, creekline restoration, remote area work and the improvement of natural ecosystem function.

Our bush regeneration teams are working on projects in Western Sydney, the Blue Mountains Region and parts of the Central West NSW.

Rock-lined Channel Construction



Vegetation Management



Willow Control



Our Company offer the following services

On-ground works

- Bush regeneration
- Experience working in Endangered Ecological Communities (EECs), and with threatened flora and fauna species
- Creek restoration and Rock-lined channel construction
- Soft-engineering structures in riparian areas
- Revegetation works; tube stock, varicella/hikes, transplanting, direct-seeding, mulching
- Swamp restoration and stabilisation including rehydration, bank and bed-armouring, rock-lined channels, small-scale erosion and sediment control (sediment fences, geotextile fabric, coir logs, straw bales etc.)
- Construction of Bio Filtration Basins
- Native seed collection (+ cleaning and dispatching)
- Soil erosion and sediment management
- Walking track remediation
- Landscaping
- Fencing and bollard installation
- High-volume weed spraying
- Noxious and environmental weed control
- Wetland area restoration
- Construction of Bio Filtration Systems
- Accredited chainsaw operation
- Community and volunteer group training & support
- Excavator and skid steer operation

Consultancy and advisory services

- (Bushland) Site Restoration and Management Plans
- Vegetation Management Plans
- Weed Management Plans, strategies and mapping
- Riparian area management strategies

Soft engineering– Level Spreaders



Bio filtration ponds



Erosion control



Soft Engineering– Coir Logs



Company Structure

The Bush Doctor (NSW) Pty Ltd operates as a company, formed in 2003 after operating as a sole trader since 1999. The director of the Company is Shane Grundy.

The companies Industrial relations are overseen by the company Employure. Their role is to keep us up to date with changes to legislations and awards as well as managing industrial relation issues.

Outdoor staff are employed under the Landscape and Gardening Award 2010. All staff are on contracts with the companies expectation outlined clearly in an Employee Handbook. We have both permanent and casual staff. All key managers and supervisors are employed as permanents. This ensures continuity in site management, company development and client relations.

The Bush Doctor (NSW) Pty Ltd began contracting 2000 when awarded a bush regeneration contract at Else Mitchell Reserve in the Blue Mountains before beginning contract work with western Sydney councils Penrith and Blacktown.



COMPANY RECOGNITION

- 2010 our work with the council was recognised by the Australian Governments National Awards for Local Government, Save Our Swamps Project and was a category winner for Innovation in Natural Resource Management. The relationship between our company and Blue Mountains council was integral in the development of the mire restoration techniques now widely accepted as industry standard.
- In 2015 I (Shane Grundy) presented at the Sydney Sandstone Swamps Research Forum at the University of New South Wales. The presentation detailed the restoration work that was carried out on the Newnes Plateau Temperate Highland Peat Swamp on Sandstone. Invited to attend again in 2016 for the presentation of research papers.
- In August of 2016 I attended a 10 day field Symposium in Malaysia looking at peat swamps and restoration techniques as a member of the International Mire Conservation Group with other international delegates. Bringing back knowledge in the restoration field and apply any appropriate practices or techniques.
- 2017 invited by La Trobe University to join them in a project to restore peatland in Rouergai Plateau Tibet. 2017 a scoping trip to Tibet was undertaken with Global Environment Centre, Wetlands International, La Trobe University and The Bush Doctor (NSW) Pty Ltd visiting potential restoration sites and meeting with officials.
- 2017 Visited Russia on an International Mire Conservation Group Field Symposium looking at Arctic Peatlands. Visiting the Comi Republic and the Sub Polar Ural.
- I presented our restoration works on the Newnes Plateau and Katoomba Park to fifteen members of the International Mire Conservation and Management Society in December 2013.
- 2011 The Save our Swamps Program was awarded a special Commendation Local Government Award in Excellence in Overall Environment Management.
- In January 2016 I was asked to attend and present at a field day for the World Wetlands Day at Neville NSW. Providing advice and demonstration of restoration techniques for the Upland Swamps in the Central West.

ENVIRONMENTAL MANAGEMENT PROJECT RECOGNITION



- In August 2016 our work on the Water NSW funded SCAF projects was showcased in the 2016 9th International Water Sensitive Urban Design Conference & 3rd International Erosion Control Association National Conference— with a presentation and field trip by BMCC titled- stormwater management using bio filtration systems in the Blue Mountains. Great interest was shown on the day by delegates.



Experience-Endangered Ecological Communi-



River-Flat Eucalypt Forest on Coastal Floodplains of the NSW

Located in our Region along the Nepean River and major Creek in Western Sydney. These systems have had a long history of disturbance dating back to the early years of the colony. Therefore much of there remains are extremely degraded and requiring intensive restoration works. These systems have major erosion and weed issues.

Picture— Weir Reserve

Endangered Ecological Community -River-Flat Eucalypt Forest on Coastal Floodplains of the NSW

- **Cassola Place, Penrith.** We have worked along this section of Great River Walk since 2003. Undertaking Weed control including Vine skirting and spraying, woody weed control (Lantana, Privet, Celtis, Box Elder, Willow, Mulberry, African Olive and Blackberry), erosion control by install erosion control matting, revegetation and monitoring.
- **Great River Walk Stages 1-4**— We have worked on the walk between Cassola Place through to the Punt Road Walkway (adjacent to the old Log Cabin) and from Francis Street through to the M4 Motorway bridge along River Road Emu Plains. This stages of works have involved weed control activities and large scale landscape planting.
- **Willow Control**— working as a contractor to the Hawkesbury River County Council we treated and removed willow along the western side of the Nepean river from Cassola place down to the quarry bridge.
- **Devlin Road**— worked for Penrith Council doing control and landscaping the public areas.
- **Nepean River**— Gulguer Nature Reserve— Woody weed control along the Nepean, controlling Box Elder and Prickly. Undertook trials on Basal Bark herbicide application on Box Elder, proved successful.
- **Mulgoa Creek**— We have worked consistently on this creek since 2002 for both National Park, Penrith Council and Mulgoa Landcare. We have undertaken Large Environmental Trust Grants. These project have included, private land and public lands. Weed control works are typical of the western Sydney riparian areas mainly woody weeds (African Olive, Privet, Buckthorn, Tree of Heaven and Lantana) and weed vines (Madeira Vine, Japanese Honeysuckle, Cats Claw Creeper, Moth Vine and Bridal Creeper). We also work on two BioBank site along Mulgoa Creek.
- **Ropes Creek and South Creek**— we worked on these creek in the early stages of the development of Ropes Crossing for Lendlease. Typical woody weed and vine control of western Sydney.
- **Cosgrove Creek**— Woody weed and vine removal for Water NSW on the Warragamba-Prospect Pipeline.
- **South Creek**— working for Blacktown Council removing woody weeds and vines Whalan Reserve.
- Great River Walk

Project Pictures- River-Flat Eucalypt Forest



- The top picture is landscaping work along River Road Emu Plains part of Stage 4 Great River Walk. The lower photograph is off vine skirting Nepean River Cassola Place Penrith.



Experience-Endangered Ecological Communities



Cumberland Plain Woodland

Cumberland Plain Woodland is the name given to the ecological community in the Sydney Basin bioregion associated with clay soils. This community is under immense pressures associated with Sydney's urban sprawl, altered hydrology, Weed invasion and fragmentation. Common Weed problems are woody weeds (African Olive) and Grasses (African Lovegrass, Rhodes and Chilean Needle Grass) on more elevated areas unaffected by stormwater. Stormwater affected areas vine ssuch as Madeira, Bridal Creeper and Moth Vine and Woody Weeds such as Privet species.

- Mount Annan Botanical Gardens- Banksia Garden 2012- Botanical Gardens/DECCW - 2012, 450 hours controlling Olive and other selected woody weeds.
- Mulgoa Nature Reserve- Shale Cliffs 2012 OEH 450 hours
- Mount Annan Botanical Gardens- Banksia Garden 2010- Botanical Gardens/DECCW
- African Olive Control 2007- 2009, 1250 hours controlling Olive and other selected woody weeds. 1400 Hours
- Mulgoa Valley Landcare – “Seven Weeds Seven Kilometres Project” -2010-2012 Controlling weeds including a large proportion of African Olive 2600 hours
- Barragal Landcare 2012- Eagle Gully and West Barragal- Follow up Olive control and Primary. 450 hours
- Barragal Landcare EMAI – Camden -African Olive Control 2007- 2009, 2100 hours controlling Olive and other selected woody weeds.
- Belgenny Farm. African Olive Control 2008. 150 hours
- Mount View Close, Razorback. African Olive and Lantana control- 2007-2008 500 hours. CMA funded
- Mulgoa Nature Reserve – DECCW- 2004- 2008, 4150 hours controlling Olive
- Gulguer Nature Reserve – DECCW -African Olive Control 2006- 2008, 1084 hours controlling weedy vines and woody weeds
- Bents Basin Recreation Area – DECCW - African Olive Control 2006- 2008, 250 hours weedy vines and woody weeds
- Western Sydney Regional Park – DECCW -African Olive Control 2005- 2008, 3625 hours controlling Olive
- William Howe Regional Park – DECCW- African Olive Control 2004, 650 hours controlling Olive
- Leacock Regional Park – DECCW-African Olive Control 2004- 2009, 700 hours controlling Olive
- Numerous other project working on Cumberland Plains Woodland.

Experience-Endangered Ecological Communities



Temperate Highland Peat Swamps on Sandstone– THPSS

Located in the Upper mountains these systems are extremely fragile. Restoration techniques need to consider the unstable nature of these peat soils when planning works, whether it be weed removal or swamp rehabilitation through soft engineering or rock work. Pressures on these systems include concentrated urban runoff resulting in channelisation and bank slump, bed erosion, water and bird/animal spread weeds and drying of swamp as a result of channelisation. We have extensive experience restoring and maintaining these systems

Endangered Ecological Community -Temperate Highland Peat Swamps on Sandstone,

- **Katoomba Falls Reserve-** soft engineering to create wetland cells and lock channelized flow paths , also weed removal
- **Popes Glen** sediment control and soft engineering. Large structures to control erosion , build timber drop down structures, build rock ramps and create wetland cells. Comprehensive weed control.
- **Yosemite Creek** Restorations, installation of erosion control structures with the aim too alleviate stream bed erosion and bank erosion. Trialling the use of timber structure instead of coir in stream
- Installation of sediment traps and erosion control devices at **Banksia Road Wentworth Falls.**
- **Marmion Swamp** restoration project, The first major use of soft engineering techniques in the Blue Mountains. Involved the installation of extensive erosion control structures with the aim of holding water in the system and re hydrating drying section of the swamp.
- **Happy Valley swamp** rehabilitation works, Soft engineering, brushmatting and revegetation.
- Installation of sediment traps and erosion control devices at **Pine Avenue Wentworth Falls.**
- **East Wolgan swamp** rehabilitation Newnes Plateau. Reconstruction of subsidence within swamp.
- **Narrow swamp** rehabilitation Newnes Plateau, weed control
- **North Lawson Swamp** weed removal
- **Maple Grove Swamp Katoomba–** weed control and erosion control using soft engineering techniques
- **Scenic World** Tea Tree swamp weed control
- Participation in **Swamps Rehabilitation Workshops** at Wentworth Falls Lake, Marmion Swamp, Leura and Long Swamp at Ben Bullen State Forest.
- **Wilson Glen** Woodford, installation of silt trap using coir rolls and jute, weeding through swamp. First trial of timber for channel blocking.
- **Jamison Creek** Wentworth Falls. Work involved many hours of swamp and riparian works treating Japanese Honeysuckle, Spanish Heath and Montbretia.
- **Upper Kedumba River** (McCraes Paddock), swamp and riparian works treating Japanese Honeysuckle, Spanish Heath and Montbretia. Willow and woody weeds along creek bank, erosion control using coir rolls undertaken.
- **Katoomba Creek-** Three years rehabilitating lands of former North Katoomba STP site. Woody weed and vine control in and around Temperate Highland Peat Swamps adjacent to Katoomba Creek.

Company Experience



Happy Valley Newnes Plateau

A damaged swamp impacted by vehicles. The site was gradually closed through brush matting and rock barriers. The creation of re wetting cells allowed the recruitment of native sedges and the site to begin regenerating.



Marmion Swamp Leura

This is the first swamp rehabilitation project in the mountains. This was a site that allowed for the development of soft engineering techniques. Beginning to learn the limits and best applications of soft engineering materials began on this project.

Construction of Timber Drop Down Structure— Popes Glen 2014



1.0 Preparing area, extremely soft and boggy had to use logs to pack a firm base for structure



4.0 completion of structure



2.0 once the bed was prepared geotextile placed and base sleepers installed



5.0 Rock armouring to and side to ensure that flows do not under cut structure



3.0 Structure taking place, due to soft base the structure had to be free standing held in place



6.0 storm event at the end of the day tested structure

Experience– ECC and TEC

Blue Mountains Shale Cap Forest (BMSCF)

- Else Mitchell Reserve Bush regeneration 2002-2005. 2010-present. Initially began work on this site during the Urban Runoff Control Program. Comprehensive bush regeneration work and more recently creekline restoration.
- Deanie Reserve Springwood– targeted weed removal 2003-current
- Paterson Road council reserve woody weed control 2007– present. A reserve containing a transition structure between Shale Cap and shale/ sandstone transition forest.



Paterson Road (top) Springwood Golf Course (below)- Endangered Ecological Communities

Both these communities are restricted to the mid-lower mountains, remnant vegetation units of the Shale Soils that once dominated prior to the uplift of the Great Dividing Range. Both respond well to regeneration techniques. Impacts on these communities include bird spread woody weeds and urban runoff. BMSCF is extremely limited in Councils reserve System, with Else Mitchell Reserve and Deanie Reserve its strong hold currently under pressure from Bell Minor Associated Dieback, SSTF has better presentation and located on the transition of the Shale caps to Hawkesbury Sandstone communities.


Shale Sandstone Transition Forest (SSTF)

SSTF main weed problems are groundlayer grass weeds, the Asparagus group, Lantana and bird spread weeds (Small and Large– leaf Privet and the increasing occurrences of African Olive).

- Springwood Golf Course General regeneration work 2005-2015. Comprehensive regeneration of site.
- Summerhayes Park Winmalee revegetation and bush regeneration work 2006-2016 . Comprehensive groundlayer work, removal of large woody weed barrier, rock channel construction and planting.
- Silverdale restoration of disturbed forest post construction work 2005-2007. Priority Sewerage Program. Seed collection spraying of seed onto ripped site and brushmatting.
- Darks Common Reserve- Blackberry and Boneseed control 2007 & 2012. Darks Common Landcare Group.
- Mitchells Pass Lapstone removing Crofton and Mistflower in drainage line 2006-2016 . Various sites in the area. City of Blue Mountains Council.
- Deanie Reserve Springwood– targeted weed removal 2003-current
- Knapsack Park– predominantly the entrance section on the ridge line. Weed control, track work and erosion control.

Cumberland Plains Experience– ECC and TEC in the Blacktown LGA

- Doonside Crescent Bushland 2009
- Faulkland Parade 2005
- Oppy Reserve 2008-2009
- Pied Piper Reserve 2004-2010
- Melody Gardens 2010
- Rycroft Reserve Quakers Hill 2008-2009
- Reserve 585 Quakers Hill 2009
- Knudsen Reserve 2004
- Best Road Seven Hills- planting 2004
- Rotary Lakes Seven Hills– planting 2004
- Sherwood Park Quakers Hills 2004
- Dr Charles Mckay Reserve 2002



Relationship with Blacktown Council

We have contracted in the past for Blacktown Council. This period was from 2004 starting work in Pied Piper Reserve through to 2010. We were unsuccessful in our provision bid in 2003. We would again like to provide our services to council.

Cumberland Plains Experience

We have extensive CPW experience, working from Penrith through to Camden and East to Seven Hills.

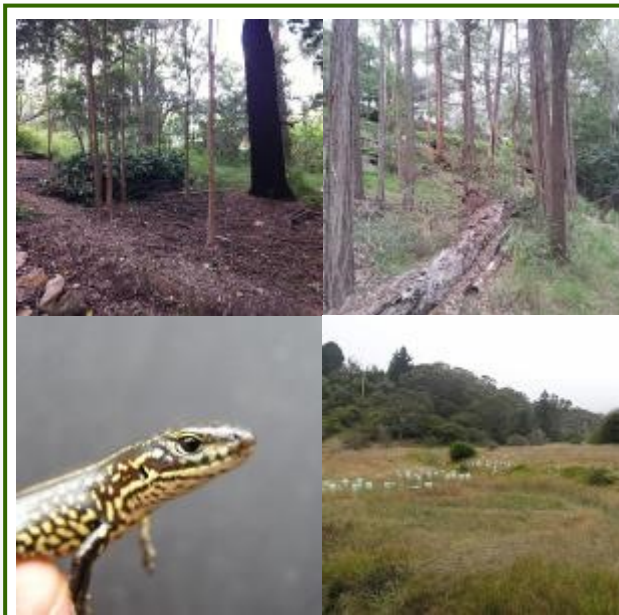
Work on the CPW has included comprehensive groundlayer weeding, threatened species work on *Pimelea spicata* (Prospect NR, Camden Golf Course, Faulkland Parade), woody weed control in both woodland and riparian zones, revegetation works and creekline/drainage line erosion control.

Site Experience-

- Mount Annan Botanical Gardens regeneration 2010– ongoing annually- African Olive Control and follow up regeneration works
- Elizabeth MacArthur Agricultural Institute– African Olive Control
-

Sydney Turpentine Ironbark Forest (STIF)

- Summerhayes Park Winmalee revegetation and bush regeneration work 2006-2016. A small section of this reserve contains this vegetation unit, in this area we have undertaken comprehensive bush regeneration removing woody weed and groundlayer weeds. City of Blue Mountains Council
- Paterson Road Winmalee and bush regeneration work 2006-2016. A small section of this reserve contains this vegetation unit. City of Blue Mountains Council.
- Lucasville Road Glenbrook- Serco Sodexo (RAAF Glenbrook) Lantana and Woody weed removal. Clearing and Asset Protection Zone.



Endangered Ecological Communities and Threatened Species-

STIF has a very limited distribution in the mountains, these remnants of the former Shale Cap vegetation communities of times long past. These remnants have a diverse groundlayer dominated by grasses and respond well to regeneration works. The Blue Mountains Skink has a very restricted distribution heavily impacted within the urban environment. Urban Runoff and weeds form a large part of these impacts.

Blue Mountains Skink Habitat and Giant Dragon Fly Habitat

- Upper Kedumba River (McCraes Paddock) Bush regeneration and revegetation 2003-2016. City of Blue Mountains Council.
- Leura Falls, Vine treatment in skink habitat 2005. Threatened Species Network.
- Wentworth Falls Lake- restoring Blue Mountains Skink Habitat 2005-2014. Threatened Species Network
- Katoomba Creek- bush regeneration in known skink habitat 2004. Sydney Water.
- Marmion Swamp, Leura. Soft engineering and weed control.
- Craig End Street Leura, private development. Weed control.
- Maple Grove Swamp. Weed Control and erosion control work.
- Yosemite Creek Catchment- THPSS restoration
- Various other site listed under work in THPSS

Company Experience-ECC and TEC

EEC Sun Valley Cabbage Gum Forest in the Sydney Bioregion

- Install fence adjacent to community, weed control along the creek line.
- Bush Backyards projects– controlling Blackberry, Lantana and other wood weeds.
- Crofton weed control on Fitzgerald Creek– Private.
- Fencing off remnants from the Pony Club, install 3 strand plain wire with gates.



Sun Valley Cabbage Gum Forest - Eare

Less than 5 ha of the community are extant (Douglas 2001, BMCC 2002) Threats include severe fragmentation, trampling and grazing by horses and other livestock, herbicide and fertilizer application, weed invasion, limited recruitment, feral animals, altered fire regimes

Company -Urban Weeds Control Program



Urban Weeds

Working closely with BMCC in implementing their Urban Weed Control Program. This has involved building good working relationship with other contractors i.e. arborists, traffic controller and machinery operators, as well as local hire companies. We have proven that we can deal effectively and coordinate these multi organization programs on behalf of council. This programs involves direct interactions with the public where we promote the Urban Weeds Program as part of the Environmental Levy work program.

Urban Weed Control Program

Undertaken various projects as part of the Urban Weeds Control Project-

- Springwood– Birdwood Gully, Council Depot, Fairy Dell, Great Western Highway, Hawkesbury Rd,
- Valley Height– Great Western Highway, Tusculum St,
- Faulconbridge-Great Western Highway, Buttenshaw Park, Commasie St, Garden Square,
- Blackheath Township– Whitley Park, Braeside, Kennedy St, Memorial Park, Thirroul St, East Blackheath Road Reserve, Blackheath Cemetery,
- Katoomba– Cascade st, Commassie, Murray St, Megalong St, Stuarts Rd, Messiters Lane, Kingsford Smith Park, Powerhouse Ln, Selby St, McCraes Paddock, Waratah St, Hope St, Lovell St, Lurline St, Neale St, Twynam St, Vale St,
- Leura—Grose St, Craigend St, Lachlan Ave, Churchill St, Kanimbla St, Rest Park,
- Hazelbrook– Coates Park, Winbourne Rd,
- Woodford– Station St, Railway Parade,
- Clarence– Lovel St
- Glenbrook – Barnett St, King St, Mitchells Pass, Wascoe, Hunt, Gray, Commuter Car Park, Whitton Park, Glenbrook Road, Moore St,
- Blaxland- woody weeds Great Western Highway, community centre,
- Wentworth Falls– Unformed Jamison st, Fletcher St, Railway Parade

Swamp remediation



Remote area work



Machinery



Spray Grass



Use of Machinery and Equipment

We are familiar with an array of large and small plant uses and applications in various site conditions, from Mines through to Peat swamps. Many years of experience has allowed us to develop work strategies for all machinery in all situations. We understand the limitation of machinery and the best piece of machinery for the task required. Working in the mountains requires this knowledge to effectively carry out task due to difficult terrain and soil conditions. We have developed great working relationships with local contractors that we have developed these work practices with. Things can go bad quickly on blue mountains sites so a comprehensive knowledge and experience base is essential. We have direct experience working with and coordinating site activities with the following plant:

- Graders
- Backhoes
- Diggers
- Mini loaders
- Excavators 1.5 tonne—25 tonne. (buckets, ripper, rock and log grabs, augers, forest mulcher heads, flail heads)
- Mini Diggers
- Trucks— B Double, Bogie Tipper, 2—5 tonne tipper
- Ride on dumpers
- Skid steer loaders
- Motorised wheel barrows
- Spray Grass Seeders
- All minor plant— Chainsaws, brushcutters, blowers, generators, pumps, jack hammers



Degraded Lands Program

We have been working with Blue Mountains council on the degraded lands program which has targeted erosion hot spots through the LGA for the past 10 years. Work has involved Brushmatting, track drainage through the installation of cross flow drainage, track rationalization, silt management by installing erosion control materials (coir products, jute mesh and matting) and mulching to reduce bare soil areas. We can effectively identify problem areas and implement effective controls whilst working in close relationship with council and earth moving contractors. We have a good knowledge of this work and have recently been employed to undertake mine rehabilitation using the skills developed working with council.

Degraded Lands Work BMCC LGA– site examples

- North Katoomba Quarry, North Leura Quarry– track rationalisation, ground ripping, brush matting, install erosion control material, mulching and revegetation
- Mount Boyce- mulching, track ripping, brushmatting,
- Mount York- rock bollards, log placement, mulching, track ripping, brushmatting,
- Knapsack Reserve– Bowaga street (brushmatting, rock bollards, track rationalisation), Lovers Walk, Marg's and Elizabeth Lookouts (erosion control, water bars, brush matting)
- Glenbrook The Bluff– brush matting, erosion control soft engineering
- Tunnel Gully, Glenbrook. Mulching and slashing
- Woodford Bulls Camp– Mulching track closure and brush matting, rock bollards
- Mount Blackheath - erosion control, brush matting and mulching
- Digger Cooper Reserve– rock bollards, brushmatting
- Kedumba Park– vegetation management
- Gully Katoomba– Mulching, revegetation, soil erosion control materials
- Hargraves lookout and Mount Blackheath- mulching, cross flow drainage, track ripping vegetation removal on lookouts

Company Experience– Degraded Lands continued

- Mitchells Ridge– mulching, slashing, cross flow drainage, track ripping vegetation removal on lookouts,
- Fairy bower Mt Victoria
- The crescent– erosion control material installation, water bar maintenance , vegetation management
- Brush matting– numerous site throughout the LGA, we are familiar with the species that are best suitable for brush matting seeding and sites where materials are available
- Track ripping– worked closely with contractors to ensure ripping is done at appropriate depth and on suitable contours
- Newnes Forest—brushmatting track closures Newnes Plateau and Lidsdale
- Lawson Tip– erosion control and soil stabilisation
- Blackheath Tip– vegetation management erosion control and laying of turf strips
- Old Ford Reserve Megalong Valley– cross track drainage, vegetation management, weed removal.





Creek line restoration

Comprehensive experience has been gained over the past 16 years working in the streams of the Blue Mountains and Cumberland Plains. We understand the instream dynamics and external factors that influence these characteristics. We have developed a vast array of treatment techniques for both perennial and ephemeral streams. Both these stream types require a sound understanding of velocity, storm water events, gradient, geology and sediment loading before any decision can be made on an appropriate remediation strategy. We have this experience and can develop a site strategy fitting the budget. Many of our projects have been showcased for their functionality, adaptability and integrative design.

Creek line restorations projects include:

- Braeside rock channel, soft engineering of creekbank, channel packing and rewetting of swamp
- Cristobel street Lawson Rock Channel
- Craig End Street Leura– rock channel, detention basin
- Garden Square Faulconbridge– re shaping of drainage line, rock armouring, drop down structures
- Hope Street Katoomba– rock ramp and channel
- Hordon Rd Wentworth Falls– Rock channel
- Jersey Avenue Leura– rock channel on steep gradient, coir stabilisation
- Mitchells Pass Blaxland– rock channel, rock sill and bank armouring
- Pippas Pass Blaxland– rock channel and soft engineering.
- Scone Eaters Landcare– rock channel and rock basin
- Linksvie Avenue Springwood– rock channel, bank armouring and rock sill bed control structures.
- South Lawson Creek– rock channel and rock basin drop down structures.
- Vale Street Katoomba- rock channel, bank armouring and rock sill bed control structures.

Company Experience



Creek line restoration



Creekline restorations projects include:

- View Street Lawson, removal of Silt and installation of coir and jute.
- Waratah Street Katoomba– stormwater detention basin
- Forest Glen Woodford-rock channel, bank armoured .
- Baxter Avenue Springwood– rock ramp and basin
- Else Mitchell Reserve Springwood- rock ramp and basin
- Sandbox Avenue Wentworth Falls– soft engineering coir installation
- South Lawson Creek—silt removal
- Yosemite Creek Katoomba– timber bed control structure, soft engineering with coir
- Warragul Street rock channel-Centennial Glen Creek
- Clydebank Swamp drainage work– silt fence and coir erosion control
- Glenbrook Commuter Carpark– unnamed tributary of Glenbrook Creek– rock channel and basins, rock drop down structure and bed control rock sills
- North Lawson Pools– rock armouring creek bank toe.
- Seventh Avenue Katoomba– rock channel and erosion control with coir and jute mesh
- Wilson Street Wentworth Falls– rock armouring narrow creekline, drop down structure and rock sill bed control structures.



Murray Street

Bio filtration Project.

An Offline Bio Filtration structure. Due to site constraints and available area to treat storm-water through the filtration media it was decided to create a longer flow path. This allows for extra time to treat the low flow, hence the U shaped basin. Again, the high velocity stream flows will pass by, capturing the low flow events is the key function of this structure

Company Experience- Bio filtration Ponds



Glenbrook Bio filtration Projects.

Managing Stormwater inputs from the surrounding developed areas. Involved the modification of some existing infrastructure and the creation of additional basins.

Jersey Avenue, Leura.

Bio filtration Project.

Involved designing and constructing a bio filtration system on a long narrow slope. Site constraints made this a difficult job involving the construction of retained walled and a stepped filtration system. The systems were constructed to act as offline basins allowing high velocity storm events to bypass the system and capture all low flow events.



Company Experience— Bio filtration Ponds

PROJECT SHOW CASE- BIOFILTRATION PONDS



Barnett Street Bio filtration Projects. WSUD Environmental Trust Project

Managing Stormwater inputs from the surrounding developed areas. Involved the modification of some existing infrastructure and the creation of addition all basins.



Company Experience



Fencing/Bollards/Signs

We have experience installing steel Bollards, Rock Bollards, Timber Bollards and Plain Wire fencing



Bollards

- Browns Swamp—concrete set, concrete filled steel bollards, dingo augured holes
- Mini Haha Reserve- concrete set, concrete filled steel bollards, welding gate brackets, painting, dingo augured holes
- Appropriate TAFE training (Shane Grundy) to hire and use excavators and skid steer plant, can be use to drill holes, recently completed a 450 timber bollard project at Camden Golf Course
- Dargan Dam- railway line bollards for Dargan Dargan Reserve Trust

Fencing

- Sun Valley- exclusion fence around the perimeter of the Pony Club protecting Sun Valley Cabbage Gum Forest (EEC)
- Installed various exclusion fences around threatened Species in Western Sydney *Pomaderris Brunei*, *Pimelea spicata*, *Marsdenia viridiflora* subsp. *viridiflora*

Silt Fence

- Install silt fencing Marmion Swamp, Valley of the Water (OEH), Clarence Colliery, BAAL Bone Colliery, various other site through the Blue Mountains both large and small scale.

Company Experience



Sign Installation

We have experience installing signage for the Blue Mountains Council. Installing post signs and interpretive signage at various reserve through the mountains.

Signs

- Knapsack Park– track signage along the entry road.
- Knapsack Park– down Hill bike track crossing signs, direction signs. Included totems, interpretive and steel post signs.
- Jackson Park- direction signs. Included totems, interpretive and steel post signs.
- Bushcare signs
 - Deanie Reserve, Springwood.
 - Jackson Park, Faulconbridge.
 - Gordon Falls Reserve, Leura.
 - Mini Haha Reserve, Katoomba.
 - Sutton Park, Blackheath.
 - Centenary Reserve, Blackheath.
 - Nichols Parade, Mount Riverview.
- Wildlife Protection Signs
 - Sassafras Gully, Springwood.
 - Bonnie Doon, Katoomba.

Company Experience– Degraded Lands



[Track Work]

We have done a lot of track maintenance for BMCC and OEH on both walking, Bike and vehicle tracks. Works ranging from drainage maintenance, vegetation management and track closures. Worked over the past few years with BMCC track care program in Knapsack Park on the new downhill bike track. We worked on a section of the Woodford Glenbrook track in the National Park working with Synergy trails. 4 staff have just completed a track construction course with TAFE and NPWS covering the construction of timber and sandstone steps on the Grand Canyon Walk Blackheath.

- Track rehabilitation for the Woodford Glenbrook Trail- OEH
- Track maintenance- Katoomba Cascades, Mini Haha Falls, OEH and BMCC
- Trail care Knapsack Park
- Berg Hoffers Pass, coxs Road, Lawson Long Ally and Lockeyrs Track Head. Vegetation and drainage work for BMCC.
- Katoomba Falls track clearing and revegetation
- Down Hill bike track rehabilitation for NPWS Glenbrook National Park, part of the end section of the Woodford track.
- Trail care Knapsack Park.
- North Lawson Stairs. Track Program(Next to swimming pool.)
- Blue mountains council track work (storm damage)- BMCC
- Federal Pass - track clearing-NPWS
- Hassans Walls Reserve Lithgow Track Work- Lithgow Council
- Integral track work happy valley- Endeavour Energy
- Knapsack Park Trans grid Track Clearing- BMCC
- National park Track Maintenance- meet at Valley of Water- NPWS
- Popes Glen Walking Track- BMCC
- Track Closure Nichols Parade Mt Riverview- BMCC
- Walking Track Program - Bonnie Doon Reserve -BMCC
- Walking track Program End of 7th Ave Minihaha Falls North Katoomba- BMCC
- Walking Track Program. Katoomba cascades veg transplant- BMCC
- Walking Track Program. Wentworth Falls Lake- BMCC

Company Experience— Revegetation



Revegetation Work

We have worked through the mountains planting at various site over the last 16 years. We have planted pot sizes from Hyco cells, viro tubes, forestry tubes, 100mm pots, 200mm pots, rescued plants, transplanted stock and long stem plants. We have a sound knowledge of planting technique, suitable plants and provenance understanding. We have contacts with local suppliers and commercial growers. We have planting experience in the Mountains Central Tablelands and Western Sydney, Project sizes have varied form 40 000 plants to 10. We are now undertaking mine rehabilitation planting works in the Lithgow Area.

Some of our project include:

- Revegetation of South Lawson Tip— planting various provenance species
- McCraes Paddock— revegetation component of a contract 20 00 plants
- Popes Glen— sedges, shrubs, ferns and canopy species, part of Environmental Trust grant
- Katoomba and Leura quarry— tubestock planting
- Summerhayes Park planting buffer vegetation to carpark.
- Else Mitchell Reserve— riparian planting
- Jamison Creek Wentworth Falls URCP plantings— Longstems.
- Other small scale projects- Katoomba Park, Maple Grove, The Gully, Braeside reserve, Glenbrook Commuter Carpark, Explorers Road, Scone Eaters, RMS basin Clearview, Clearview Parade swamp, North Lawson Swamp, Yosmite Creek, Scenic World, Jersey Lane, Murray Street.

Company Experience– Degraded Lands



Soil, Seed and Vegetation Translocation

We have been involved in both large scale and small scale vegetation (brush matting), topsoil and large scale cleared vegetation relocation. This is the most effective regeneration technique if done correctly. We have been involved in mine site rehabilitation, land fill site and track rehabilitation project using these techniques.

Soil, Seed and Vegetation Translocation

- Track brushmatting- Katoomba Quarry, Leura Quarry, The Gully, Bardens Lookout, Knapsack Park, Lawsons Long alley, Mount York, Clarence Colliery, Happy Valley, East Wolgan Swamp, Narrow Swamp, State Forest Track Newnes Plateau, Londonderry Reserve, Hyde Park, Hassan Walls and numerous other reserves and tracks.
- Berg Hoffers Pass, coxs Road, Lawson Long Ally and Lockeyrs Track Head. Vegetation and drainage work for BMCC.
- Clarence Colliery– rehabilitation of reject emplacement areas using translocated topsoil. These project also Involved relocating large amounts of cleared vegetation used to aid revegetation.
- Kemps Creek– Large amounts of vegetation and topsoil stripped and relocated on site for a rehabilitation project



Vegetation translocation Meadow Bath Sewerage upgrade

Post Fire Emergency Works / Storm damage

Involved with the first response work to manage and prevent potentially contaminated runoff in the Springwood, Winmalee and Yellow rock areas after severe bushfire 2013. Installing sediment fence, coir structure and covering drain grates. Working closely with the council also with the Australian defence forces.

Cahills Lookouts and Boars Head– Post Fire rubbish removal, soft engineering structures for sediment control and track closure.

Mount York post fire erosion control around Mount York lookout and recreational area. Also Barden Lookout. Installation of coir rolls and erosion control materials. Vegetation ,management.

Blackheath—Meadlow Bath Storm Clean-up– Track clearing of fallen vegetation, reserve vegetation management working in cooperation with other contractors. We have also worked clearing fallen vegetation after snow storms in recent years



Mount York Post Fire

Erosion control



Springwood / Winmalee Bush fires

Creekline protection



Company Experience



Community Support

Over the past 16 year we have been involved in a lot of community support activities. Including tree planting, erosion control, weed control and landowner support officers.

Community, Landcare and Bushcare

- Clarence Landcare Group– monthly support within the Peat Swamp on Sandstone on the Newnes Plateau. SOS Community and School days including Lake Pilans constructed wetland with international volunteers, Thompson Creek Dam Schools Week, Zig Zag Primary School and Lake Wallace Annual tree planting, Lithgow LLS and Lithgow Oberon Landcare Association.
- Soft Engineering Workshop for Council staff, International Mire Conservation Group, Government agency Staff and community stakeholders at Katoomba Park, Braeside Swamp, Long Swamp, Happy Valley, Marmion Swamp, Kerma Crescent and Browns Swamp.
- Mulgoa Valley Landcare support since 2000. Currently have a Landcare Support Officer working with land owners along Mulgoa Creek part of a 6 year Environmental Trust Grant.
- Participated in numerous BMCC workshops and work demonstrations. Popes Glen stormwater, Long Swamp soft engineering, Katoomba Park soft engineering demonstration,
- Community weed workshops at Picton and Glen Davis. Weed control techniques. LLS
- Valley of the Water volunteers demonstrating installation of soft Engineering and weed control
- Jenolan Caves Reserve Trust–Supervision and training of up to 30volunteers for biannual Sycamore control weekends Jenolan Caves Reserve Trust/OEH
- Leura Public School Landcare Group monthly training and support for volunteers rehabilitating swamp and threatened species habitat Save Our Swamps Project BMCC

Green Army Support / Green Corps

- Recently actively involved in working with the Lithgow hosted Green Army, as a result employed three staff over the last 12 months. Working with them at Hassans Walls and Lithgow Pony Club
- Previously involvement with the Lithgow hosted Green Corps, work with them Hyde Park, Lake Pilans and in Lithgow LGA.

Company Experience



Cultural Work

Over the past 16 year we have been involved in working within cultural sensitive areas. We have a great deal of respect for these sites and there values. We have a good ability at identifying artifact and know the correct process to undertake when finding these.

We currently employee aboriginal descendants and have employed aboriginal since the business began

Cultural Sites/works

- Tycehurst Park Faulconbridge– working with aboriginal elders and locals helping preserve the rock art site, our role was to remove grass from shelf. BMCC
- Discovered a new cave painting in the Wollangambe River area.
- Work in Hyde Park installing erosion control devices to reduce loss of artefact's through soil erosion and vehicle damage
- Work in the Gully Katoomba, degraded lands work, revegetation.
- McCraes Paddock Katoomba– weed control and revegetation.
- Worked with the Darkinjung Land Council as part of the SOS project in the Gosford LGA, workshop involving training on the use of soft engineering techniques and materials.
- Our company was engaged to prepare a report detailing Cultural and Ecological Values of Mcpherson State Forest.



Left: Darkinjung LALC Conservation & Land Management Certificate III students participate in the construction activities- Mcpherson State Forest.

Right: Dennis



Company Experience



Helicopter Support Work

In recent year we have been involved with projects that required the use o helicopter for lift work and access.

The restoration of swamps on the Newnes Plateau required materials to be lifted in. The restoration of the Wollangambe River required the use of helicopters on a weekly basis. We have approximately 400 hours work experience with them. Work required radio communication slinging and coordination of material drop and worker extraction.



Company Experience



Landscaping

We have a lot experience on landscaping projects. Projects in the mountains include landscaping at Wentworth Falls Lake doing sandstone work at water entry points. Private work doing retaining walls. We have done lot of work on the Nepean River– Great River Walk stage I-IV and Penrith Council landscaping projects.



Wentworth Falls Lake– Entry Points for BMCC





Nest Box installation

We have installed approximately 150 nest boxes on assorted projects in recent years. They have ranged from Parrot Boxes, Owl Boxes , Micro bats and Glider nest boxes. Clients have been from LLS grants and private projects.