Construction Environmental Management Plan (CEMP)

Project- Harcourt Mountain Bike Park Construction
Location- Harcourt, Victoria

May 2017

Report Version- 1B

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Title: Harcourt MTB Construction	**Approval**: Simon French
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1 Document Control

Document version	Date	Revised by	Signed
1A	4th May 2017	Simon French (Managing Director)	
1B	5th May 2017	Luke Chiu (General Manager)	

2 Company environmental policy

Aim

Dirt Art is committed to conducting business in an environmentally aware and responsible manner. *Dirt Art* seeks the co-operation of company management, employees, contractors and project partners in ensuring that organisational practices are conducted with the most minimal environmental impact.

Objective

To work with employees, contractors and project partners to deliver project outcomes that limit environmental impacts, and where possible provide a net environmental benefit.

Policy

Dirt Art will work proactively to minimise impact on the following:

- Atmospheric emissions
- Site contamination and spills
- Noise Emission and Vibration impacts
- Damage and/or disruption to flora and fauna
- Storm water, erosion and sediment management
- Unnecessary energy consumption

To fulfil this commitment, *Dirt Art* will observe all environment laws and promote environmental awareness among all staff and contractors to increase understanding of environmental matters.

Dirt Art will actively take part in the following:

- Comprehensive planning to limit project environmental impacts
- Limit flora and fauna disturbance across all projects
- Assess Eco-footprint to identify environmental impacts and move towards more sustainable practices
- Identify waste streams and options for effective waste management

- Improve purchasing (buy recycled materials, reduce waste, use less harmful/volatile chemicals)
- Improve storage (reduce quantity, waste and spills, Reduce odours by keeping containers closed)
- Conserve energy (eco-friendly lights, turn lights off, emergency efficient equipment, greener fuel sources –such as LPG and methane).
- Conserve water (install water saving accessories, repair leaks)
- Preserve water ways (clearly mark and protect storm water drains)
- Emergency planning and spill response
- Seek appropriate licenses/permits from State Environmental Protection Agencies and other relevant Authorities.
- Improve education/awareness
- Notify relevant authority in the event of a major environmental impact.

Managing Director: _____ Date: 25th December 2015

References

EPA Victoria – ECO footprint – Managing Impact on the Environment
EPA Victoria – Sustainable Business and Industry

3 Statement of commitment

Dirt Art recognises its moral and legal responsibility to minimise damage to the environment caused by work activities and practices. This commitment extends to ensuring that operations do not unnecessarily endanger flora, fauna, sensitive areas, sites of heritage importance or present concerns to members of the public and community.

The objective of this EMP is to actively work towards elimination and reduction of negative affects to the environment by ensuring environmental impacts are incorporated into all levels of the organisation, from planning to project delivery, and utilising best practice techniques wherever possible.

Responsibilities

Management are committed to:

- Integrating EMP into all aspects of *Dirt Art* operations
- Compliance with all relevant legislative requirements and co-operation with Regulatory bodies.
- Implement measurable targets to ensure continued improvement reflected in accountability/key performance indicators at all levels.
- Consultation with employees and other parties to improve decision-making on environmental matters.
- Identification of environmental issues, assessment of risks and implementation of best practice controls to limit negative impacts to the environment
- Development, implementation and review of written work procedures
- Distribution and communication of information and work procedures
- Training and supervision to employees, contractors, clients and visitors to ensure EMP and written procedures to minimise environmental impacts are followed.
- Review and assessment of the EMP, including persons who are responsible for the management, update and review of EMP

Employees and contractors are expected to:

- Take reasonable care, and consideration, of environmental impacts while at work;
- Co-operate with *Dirt Art* to enable compliance with legal obligations

- Participate in consultative arrangements in relation to environmental matters
- Assist management to meet environmental targets/key performance indicators

Managing Director:  **Date: 25th December 2015**

4 Summary of site and surrounding area

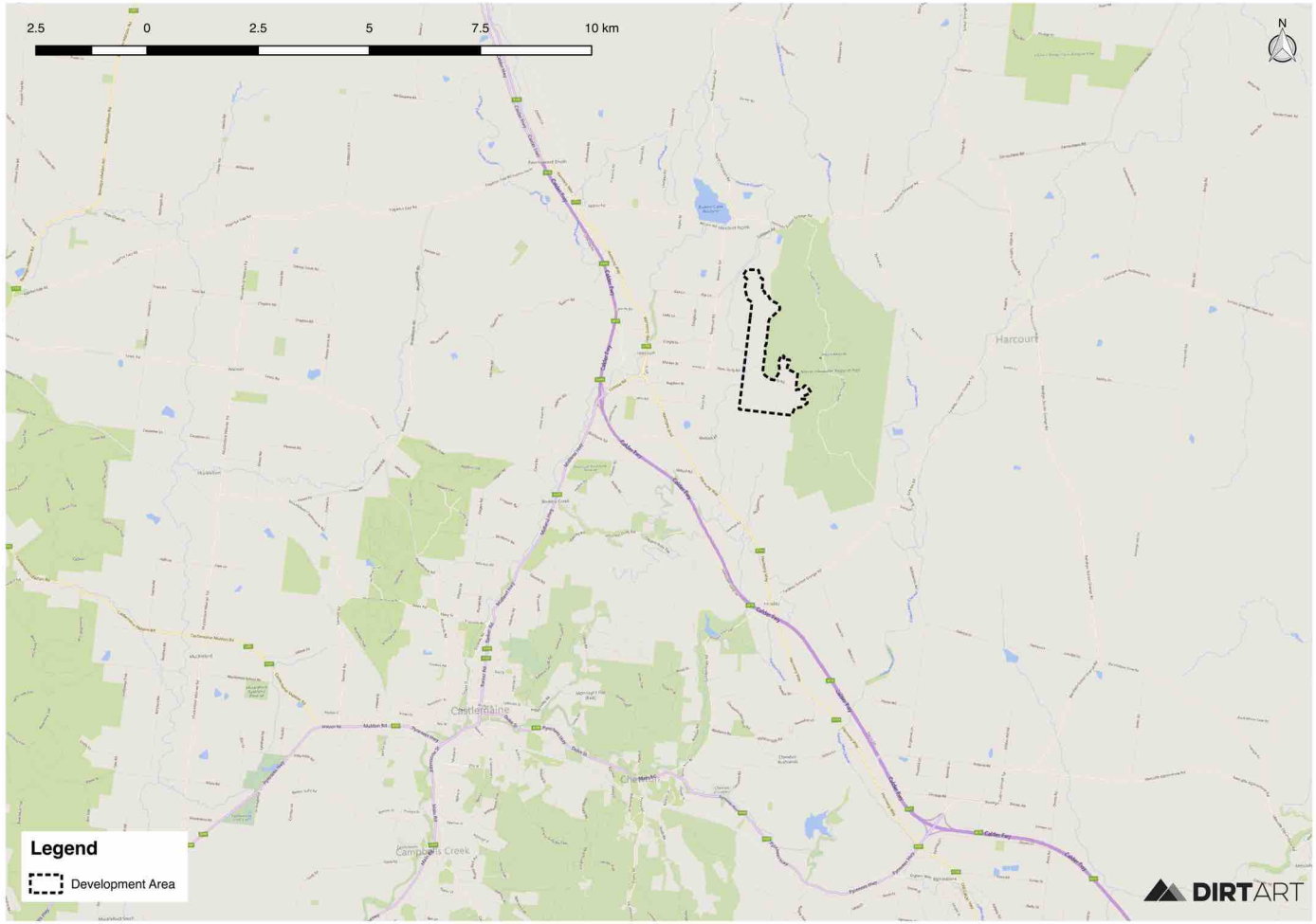
The project site is located approximately 2.5km outside the township of Harcourt, in the foothills of Mount Alexander.
The site is characterised by granite/clay soils, and has extensive areas of large and smaller granite rock outcrops and boulders. These rocky areas have where possible been incorporated into the network, and offer the chance to create iconic and engaging trails.
Topographically, the site is predominantly rolling hills, with moderate gradients (20-40%). Some areas of the site possess steeper gradients, that will allow incorporation of some more technically demanding, advanced-level trails. There are a number of periodic creeks on site, though some of these appear to be dry during parts of the year. Creek crossings have been limited in the network design, and where required will be treated with rock armouring, or utilise existing crossing points. No formal bridge or platform structures are required.
The climate on site is typical of a moderately elevated site in central western Victoria, with hot, dry summers and cold, wet winters. The wetter periods will be offset by the granite content in the soil, which should allow for near-year round riding capability.

The site has historically been used as a pine plantation, though the final harvest was completed some 10 years ago. Some areas of the site have been rehabilitated and re-planted in a minor capacity, though much of the site still contains clear evidence of past timber harvesting. The site does have a number of smaller areas of higher-quality remnant native vegetation, these areas are commonly located in higher elevation areas of the site. All areas of vegetation rated as 'high value, no-go zones' have been avoided by the proposed new trails network. All trails can be developed sensitively, and is critical to the aspirations of the project as a 'world-class' mountain bike trail network.

Existing social use of the site is focused on the 'Oaks' area at the lower area of the site, which has been actively avoided where feasible during the design process. Horse riders utilise some areas of existing trail, though this use will be largely unaffected by the development. A range of unauthorised users appear to use the park infrequently, including both 4WD and trail bike riders. These unauthorised users will likely be passively excluded from the park due to the increase in mountain bike trail users.

The site has a high-level of cultural heritage significance, including know artefact sites, shelter caves and scar trees. Known heritage sites have been avoided during the design process, with an indigenous representative due to be on site during the construction process should further artefacts or other heritage be encountered. One short loop has been proposed in the heritage zone on the northern knoll, at the request of the local user group. At the time of writing this consultation is still taking place as to whether this loop will be incorporated or not.

5 Site map



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6 Proposed activities summary

6.1 Overview of activities

This project involves the construction of network of approximately 34km of mountain bike-specific singletrack trails. Trails will be constructed by both excavator and by hand.

6.2 Project summary

WORK ELEMENTS	DESCRIPTION
Name of Project	Harcourt Mountain Bike Park Design and Construction
Duration of Project	6 months (approx.)
Area of disturbance (including access/egress)	Average trail tread 1200mm. Average total disturbance width 1500mm
Operating hours at site (indicate am, pm)	7:00am-4:00pm Monday-Friday (outside hours by agreement)
Water table depth	Unknown
Geotechnical sampling results (if applicable)	Not applicable
Chemicals, fuels, volume and storages	As per project plans

6.3 Trail construction summary

Trail difficulty grading	Various
Trail users	Mountain bike-only
Construction methodology	Excavator, some hand construction
Tread width	600-1,500mm
Trail features	Natural trail features where possible
Bridges/platforms	Not required

6.4 Proposed trail design methodology

Dirt Art has developed a revised concept trail network for the project, based on a range of considerations, including but not limited to; environmental consultant reports, cultural heritage reports, trail quality, mountain bike market profile information, local rider feedback and land manager feedback and requirements.

Concept trail alignments have been ground truthed in their entirety, and all pose high-quality building conditions. At the time of this report the corridors represent a 50m construction corridor, with this corridor to be further refined through a detailed design and route flagging process.

Representatives from *Dirt Art* will complete final trail flagging based on the concept plan in coming weeks. Design works will be led by *Dirt Art's* Managing Director Simon French and General Manager Luke Chiu, who have significant trail design experience.

Flagging tape will be hung at 3-5 metre intervals defining the final agreed trail alignment. Pin flag markers will be used in areas where no vegetation is available to hang flagging tape on.

During construction an agreed ongoing alignment variation threshold will be established (20 metres), allowing construction teams to make micro alignment adjustments as required. Any required larger alignment changes will be negotiated with the principal when/if required.

6.5 Proposed construction methodology

Overview

Dirt Art propose to resource the Harcourt Mountain Bike Park project with up to 5 construction teams, with each team generally consisting of; Team Leader/Excavator Operator and two Trail Crew/Labourers. The teams proposed for this project have significant mountain bike and shared use trail construction experience, including extensive granite soil experience, including trail construction at Thredbo Resort and around Jindabyne in NSW.

The objective of the team would be to construct a truly world-class network of trails, minimising environmental impacts while delivering a safe, sustainable, engaging and exciting trail for all trail users.

Final design

Dirt Art's Managing Director and Senior Consultant Simon French would complete all final design works, working closely with the principal to ensure that the proposed alignment minimises environmental impacts and meets the requirements of the project. *Dirt Art's* Environmental Scientist and Project Manager Luke Chiu would also be involved in the final design process to ensure that the resulting alignment offers the most minimal environmental impacts.

The final trail alignment would be flagged with surveying tape and pin flags at a minimum of 3-5 metre intervals.

Final alignment inspection

Upon completion of the final alignment, the alignment would be inspected by *Dirt Art's* Environmental Scientist Luke Chiu to ensure all environmental impacts are minimised. The alignment would also be presented to the principal for inspection and potential revision. The final alignment inspection would include checks for any fauna habitats that may be impacted by construction, in which case alignments will be adjusted as required within the approved corridor.

Vegetation clearance

All vegetation clearance will occur within the constraints of the final planning permit conditions for the trail. Prior to commencement of bench cutting, all standing vegetation within the trail alignment would be cleared a maximum of 20m ahead of the construction team. This forward

clearing provides a clear picture of ground conditions, allowing for pre-emptive micro-alignment adjustment to avoid unforeseen ground conditions such as large areas of non-usable bedrock and/or large tree roots. Following standing vegetation clearance, all grasses, low-lying vegetation and organic matter would be cleared from the trail tread. Decomposing organic material, including fallen trees would also be removed from the trail tread. Prior to commencement of bench cutting there would be no remaining vegetation on the trail tread.

Vegetation is to be cleared to approximately 2.0m or more when required to allow for space for excavations (benching, sustainable batter development, borrow pits and track shaping), improvement of line of site on corners, and to reduce future maintenance of shrub pruning. Clearance and pruning of shrubs at creek / tributary crossings should be as minimal as possible to allow for construction.

When feasible the track will avoid the fall line of living dangerous trees or hollow-bearing dangerous trees when inspected from ground level. Dangerous trees or dangerous limbs that pose a risk to users of the track can be felled at the discretion of the principle.

Low lying vegetation and organic material will be passively dispersed to the low side of the trail tread, beyond the low point of the eventual bench cut (i.e. no structural component of the trail should rest on vegetation or organic matter). Larger vegetation such as limbs, branches and shrubs will be removed from the trail tread area so they are not visible to trail users. Larger vegetation should be passively dispersed rather than stock piled, or alternatively may be chipped and spread through the trail verge area. Trail verges would where viable be thatched with cleared vegetation, or lined with grass sods removed from the trail alignment, to limit the need for straw to be imported into the site, with the end result being no bare earth other than the trail tread itself.

No established trees (i.e. greater than 100mm Diameter at Breast Height (DBH)), are proposed to be removed. In the unlikely event that any established trees are required to be removed then *Dirt Art* would first seek specific approval for such removal from the client.

Vegetation and any organic matter is not to be placed in any waterway, low area or area where water flow volumes are likely.

The final result would be a naturalised final trail product with no openly visible cleared vegetation debris.

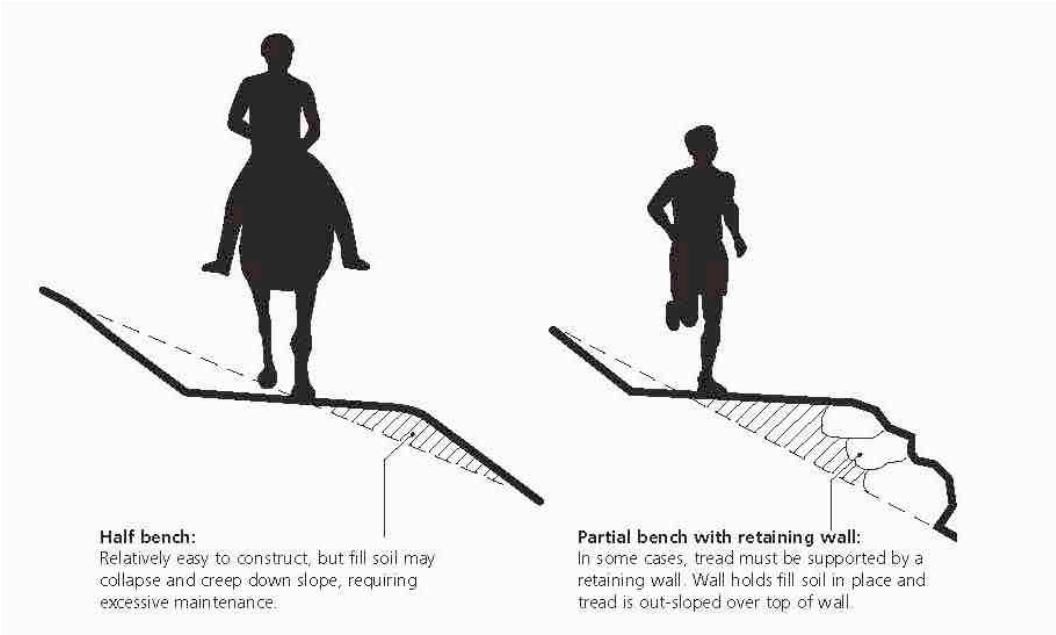
Bench cut

Dirt Art intend to complete all bulk trail excavation works with a rubber-tracked mini excavator. *Dirt Art* utilise Kubota U17-3 excavators as they have proven to be the most reliable, safe and manoeuvrable excavators on the market. The machine would be fitted with a tilt hitch head to allow for optimum trail shaping and edge battering work.

The standard bench cut for all trails will average 1200mm in width. Most trails will have a functional trail tread of 1,000mm in width, with some sections up to 2,000mm+ in functional width around switchback corners and where required to incorporate trail features.

A full bench cut is the intended and preferred benching approach, though it is acknowledged that this is not always a viable approach, particularly in areas containing bed rock and/or tree roots. Partial bench construction may be used in areas where a full bench cut is not possible/viable, and where required would be supported with a low side stone wall and applicable trail anchors. Partial benched areas would be extensively excavator compacted using both bucket and track rolling compaction methodologies, with the low edge stabilised with rock when necessary.

Viable excess soil material will be used to create a three-dimensional trail tread (rollers, berms etc.), with non-viable soil (including humus and top soil) from the trail bench to be passively dispersed and naturalised. Excess top soil should be utilised on top side batters away from waterways and to aid with revegetation. Excess vegetation and organic matter should be placed at the low side of the trail bench which can also assist in arresting sediment movement.

Full bench construction (Image courtesy IMBA)	Part bench construction (unsupported and supported edge) (Image courtesy IMBA)
	

Borrow pits

In some sections (e.g. flatter areas) there is the opportunity to dig borrow pits and take decomposed granite soil from the pit, then infill the borrow pit with top soil that has been removed from the tread of the track. This borrow pitting approach to construction is also often referred to as 'lift and tilt' construction.. This will improve the durability of the trail and will help to reduce erosion. Where borrow pits are used they are to be infilled and should when feasible be placed below a drain on the low side of the track so that if the pit slumps it will act as a sediment basin.

Edge battering

The top-side edge of all trails would be battered to a target maximum gradient of 50-70%, with a preferred slope at the lower end of this range. This edge battering increases the rideable area of trail tread, while also ensuring the long-term integrity of the trail batter. During machine construction a tilt head attachment assists greatly with this battering process.

Edge batter treatments would be implemented as per the project scope, as required.

Figure 6.3- Edge battering (Image courtesy IMBA)

Rolling contour construction

All trails would be built in a rolling contour style, utilising frequent, large/meaningful grade reversals. This style of construction provides a free-flowing trail experience for mountain bike riders with optimal passive drainage at regular intervals. The rolling contour style of trail would provide meaningful grade reversals rather than smaller nicks or water bars.

Grade reversals will be installed at the entry and exit to any waterway crossing to reduce the risk of sediment flow into waterways.

Rolling contour construction example

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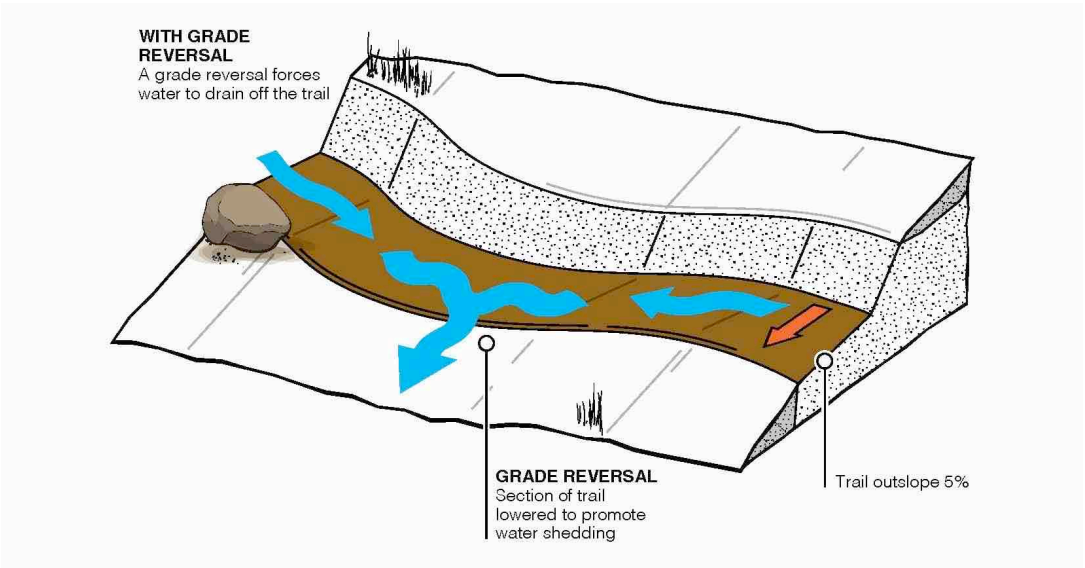
In sloping and out-sloping

A rolling contour style of construction allows for much of the trail tread to be developed in a subtly in-sloping fashion. In-sloped trails provide greater rider confidence, improved trail edge stability and increase trail flow. When utilising an in-sloping style of trail, short, frequent out-sloping areas would be installed at the low points of the trail.

Out sloping areas would feature a minimum out-slope of 3-5%, and would provide free draining potential for a minimum of 3000mm below the trail tread.

An in-slope/out-slope rolling contour construction approach dramatically reduces ongoing maintenance demands, by reducing the area of drainage that needs to be re-profiled through normal wear and tear. Rather than re-profiling long sections of trail to reinstate drainage, only short sections of low area trail would require maintenance.

In-sloped and out-sloped trail diagram


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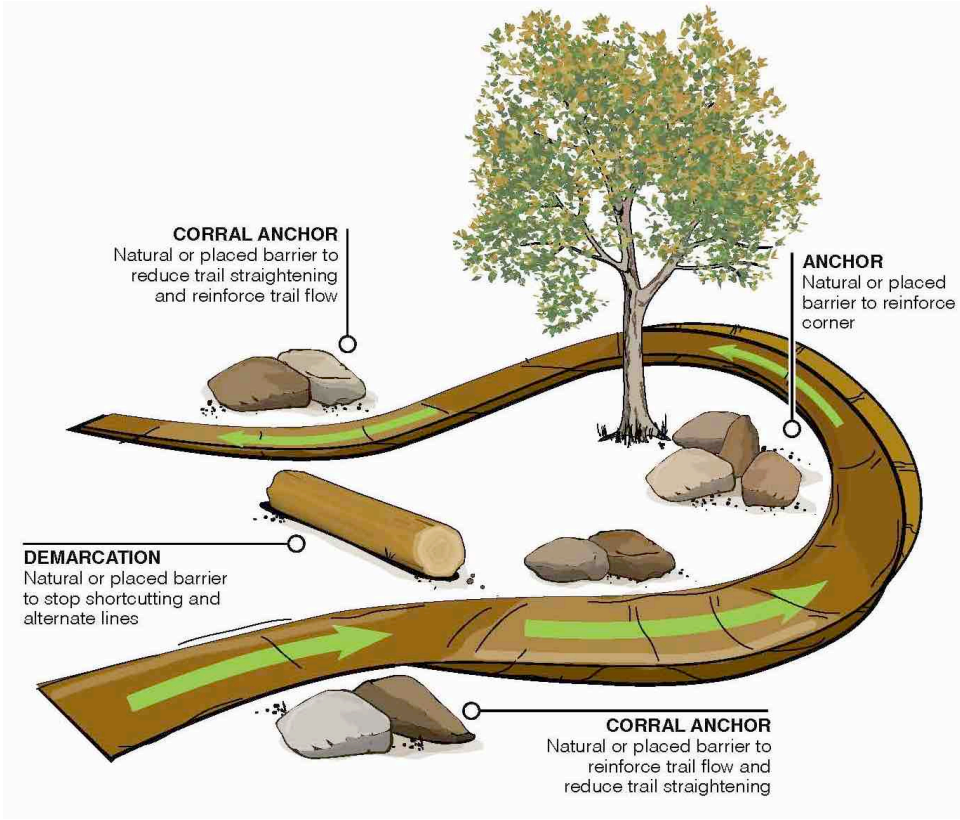
Chokes and anchors

Chokes and anchors would be used subtly on the outside aspects of trails, particularly on corners where required to corral riders onto the preferred ride line. Rocks and chokes would not restrict the rider's ability to safely lean into trail sections, and would not be placed where they are likely to catch pedals or derailleurs. Chokes and anchors would be rock where possible, and where timber is used no sharp edges should remain that may pose a safety risk to riders.

Chokes and anchors would in the majority of cases not be used to slow/calm the trail, instead grade reversals should be utilised. In *Dirt Art's* experience chokes and anchors used to slow/calm the trail typically result in hard braking and reduced trail flow, increasing trail wear and associated environmental impacts. Final trail design efforts would attempt were possible to calm trail speeds through effective grade reversals rather than relying on chokes/anchors to reduce user speeds.

All anchors and chokes would be installed as per the specification provided in the project scope and related documentation.

Trail anchor diagram



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Drainage

Effective drainage throughout the trail network would be achieved through the use of a rolling contour style of trail, featuring frequent grade reversals. Pipes and culverts would be avoided where possible, and *Dirt Art* do not envisage requiring this style for this drainage. Any desired/required alternation to this approach would be negotiated with the principal. Topside edge drains (French drains) should be utilised only where significant water down-flow and/or water seepage is likely.

Sediment run off would be managed in a range of ways, primarily through immediate compaction and through the use of frequent grade reversals. Silt traps and related measures would installed as required and as per the project scope and/or at the direction of the principal.

Further drainage and sediment control information can be found in the sediment controls section of this report.

Compaction

All trail surfaces would be effectively groomed and compacted both by excavator and by hand during construction. Sections of trail would be compacted and groomed immediately post excavator construction to minimise the risk of sediment run-off into surrounding bush land and water courses.

No trail section longer than 200 metres would be left uncompacted at any one time, with this length to be shortened in periods of wet weather. When complete compaction can not be achieved at the time of construction due to extended periods of dry weather, the crew will return and complete compaction after rain brings sufficient moisture to bind the soils.

Rock armouring

Rock armouring will be installed in areas prone to water flow and/or standing/seeping water, and in areas of high tread wear (i.e. above 20% gradient). When installing rock armouring larger, flat edge rocks would be used where possible- rock of a 'toaster to microwave' size would be the target rock size. Where smaller rock is prevalent, the beginning and end row of each rock armoured section should be composed of the largest rocks available, using a flag stone construction approach. Where smaller, flat rocks are prevalent, a 'pitching' style of armouring should be utilised.

Dirt Art envisage utilising stock pile rock resources won from the trail tread, or existing quarried stone that is prevalent throughout the site in the majority of situations. Where local rock cannot be sourced from within the trail tread, rock from the approved rock supply would be transported from other areas of the site. Priority will be given to using the existing quarried stone onsite wherever feasible.

When rocks are collected from outside of the track's immediate tread, the following restrictions will apply for stockpiling and transporting rocks;

- Rocks will be transported either by being carried by hand, wheelbarrow / cart.
- Random and varying routes will be used when collecting or searching for rock so as to reduce the risk of impacts by passing over the same area outside of the track's corridor
- Preference will be given to using existing quarried stone onsite wherever feasible.

Corrals (typically rock) would be installed where required to ensure that riders remain on the armoured trail surface.

Rock armouring example image- Hornsby, NSW


Hand grooming

The proposed crew/team structure for this project includes two trail crew/labourers following the excavator. These two staff would work extensively to groom the trail surface, adjust drainage, shape berms rollers and jumps and to complete rock armouring works as required.

Hand grooming works include but are not limited to; surface shaping, drainage/low area shaping, surface raking, shaping of dirt trail features, edge battering, rock work, vegetation pruning and naturalisation.

Naturalisation

All completed trail sections would be effectively naturalised. Naturalisation utilises older organic materials to return the trail verges to a more 'natural looking' state.

This process would involve the covering of all bare earth other than the trail tread in organic material, using a thatching technique on battered slopes as required. The use of imported straw would only be used where not viable to use local vegetation material.

Naturalisation and the use of any imported materials such as straw would be completed as per the project specifications/scope and related documentation.

Naturalisation example image (Blue Mountains, NSW)


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Staff movements

The predominant access methodology into the site would be a 4WD vehicle (on service roads), walking and/ or mountain bike use. Mountain bikes would be used only where the trail is finished to a point that no lasting damage would occur.

7 Environmental risks and controls

7.1 Overview

This project involves the construction of a 34km trail network on a site with a range of environmental and heritage values.

A number of potential environmental risks have been identified, with associated controls detailed.

7.2 Flora damage/disturbance risks and controls

FACTOR	RISK ASSESSMENT OUTCOME				CONTROL MEASURES SUMMARY
	Extreme	High	Moderate	Low	
Removal of protected flora			✓	✓	1. *Dirt Art* team member to conduct an immediate pre-clearance inspection on each section of trail. This inspection will target; rare/protected flora and fauna habitats (including; logs, rocks, leaf litter, and fallen timber). Any fauna located is to be removed to an adjacent habitat 2. Protected/endangered flora (including 'high value, no-go zones') to be avoided during trail design and construction, 3. Buffer zone to be implemented for all protected/endangered where near to final trail alignment 4. No protected/endangered flora to be removed/modified/disturbed without approval, unless otherwise approved in development conditions 5. No established trees (greater than 100mm DBH) to be removed 6. The Principal may approve the removal of larger trees or limbs after a hazardous tree risk assessment has recommended tree removal.
Excessive removal of flora			✓	✓	1. Flora only to be removed on trail corridor 2. Flora to be removed as per direction of the principal (rare and threatened species to be retained) 3. Flora to be cleared to a maximum of 50 metres ahead of excavator/construction team to mitigate risk of forced alignment change clearing flora unnecessarily 4. No canopy trees and/or hollow bearing trees to be removed unless the Principal determines that it is necessary due to the results of a hazardous tree risk assessment. 5. With the exception of the vegetation that is cleared in the trail corridor, all damage to vegetation, including but not limited to riparian vegetation will be

					avoided. If damage occurs due to an unforeseen incident, the damaged area will be rehabilitated.
Damage to tree root integrity			✓	✓	1. Drip zones to be avoided for all mature trees where possible 2. Trail to be routed above (not below) existing mature trees where possible to avoid damaging roots 3. Where tree roots are unavoidable trail to be constructed up and over tree roots using extensive soil or rock armouring 4. No excavation greater than 1m in depth to occur inside the drip line of larger canopy trees and/or hollow bearing trees. 5. Exposed tree roots to be left undamaged by machinery, and to be rock armoured to protect root integrity.
General vegetation disturbance			✓	✓	1. Varying routes to be utilised when off-trail access required for vegetation spoil dispersal and/or rock harvesting 2. Works to remain within the trail tread area whenever possible to avoid unnecessary peripheral disturbance 3. Care to be taken when operating machinery around vegetation to avoid strike damage 4. Staff to avoid traversing through any bog areas at all times 5. Vegetation pruning to be limited to that required to establish a safe trail, within the specifications of the contract 6. Cleared vegetation will be stockpiled within the cleared corridor. It will then be stockpiled to the edge of the corridor for track construction to occur. A time limit of seven days will apply for which the cleared vegetation can be stockpiled on living vegetation to the side of the track. Prior to the seven-day period expiring, the stockpiled vegetation will either be used for rehabilitation of disturbed soils, or strategically dispersed throughout the areas on either side of the track. Dispersing of materials will avoid all potential flood zones, bogs or other waterways and will not be placed on any shrubs or wood growth. 7. When rocks are collected from outside of the track's immediate tread, the following restrictions will apply for stockpiling and transporting rocks; - Rocks will be transported either by being carried by hand, or wheelbarrow / cart. If a wheelbarrow or cart is used, it will not be wheeled over any creeks or wet areas without the use of a temporary platform.

					- Random and varying routes will be used when collecting or searching for rock so as to reduce the risk of impacts by passing over the same area outside of the track's corridor - Collected rocks will be stockpiled within the immediate corridor of the track.

✓ Pre- control risk

✓ Post- control risk

7.3 Fauna disturbance risks and controls

FACTOR	RISK ASSESSMENT OUTCOME				CONTROL MEASURES SUMMARY
	Extreme	High	Moderate	Low	
Disturbance to fauna habitats			✓	✓	1. *Dirt Art* team member to conduct an immediate pre-clearance inspection on each section of trail. This inspection will target; rare/protected flora and fauna habitats (including; logs, rocks, leaf litter, and fallen timber). Any fauna located is to be removed to an adjacent habitat 2. Final trail alignment to avoid all noted fauna habitats (including all 'high value no-go vegetation zones') 3. Final agreed trail alignment be followed at all times 4. Work to be paused and principal to be notified in the event of any unexpected habitat disturbance 5. Fallen logs not to be moved/relocated unless strictly required and with the agreement from the principal
Removal of fauna habitat trees			✓	✓	1. Hollow/habitat trees to be retained at all times unless removed by the direction of the principal
Fauna entrapment in excavation			✓	✓	1. No open excavation to be left on site overnight 2. All open excavations to be filled immediately, or fenced if left beyond immediate filling

✓ Pre- control risk

✓ Post- control risk

7.4 Fire risks and controls

FACTOR	RISK ASSESSMENT OUTCOME				CONTROL MEASURES SUMMARY
	Extreme	High	Moderate	Low	
Risk of works teams igniting fire (relevant post October 2017 only)		✓		✓	1. Work that may risk the ignition of a fire is to be ceased on State Total Fire Ban days and/or Park Fire Ban days or at the discretion/direction of the principal 2. No smoking on the work site 3. No fires in the work place 4. Spark arrestors to be fitted to all excavators/machinery 5. Charged fire extinguishers to be fitted to all excavators and checked in daily checks 6. Filled 20L knapsack pump to be within 50m of each construction team at all times of High Fire Danger or above (McArthur Forest Fire Danger Index). 7. Fire rakes (rakehoes) to be within 50m of each construction team at all times 8. Reliable communications to be maintained on site at all times (satellite phone where required) 9. All fuel stored on site to be in a secure bund, with fuel storage to be minimised where possible 10. Re-fuelling of equipment and machinery to be completed in the early mornings where possible 11. Machinery (chainsaws, brushcutters etc.) not to be placed on the ground where long grass exists following use 12. Filled knapsack to be immediately beside all welding operations at all times. The area immediately surrounding welding will be dampened with water if the vegetation is not already naturally damp from environmental factors.

✓ Pre- control risk

✓ Post- control risk

7.5 Erosion and sediment risks and controls

FACTOR	RISK ASSESSMENT OUTCOME				CONTROL MEASURES SUMMARY
	Extreme	High	Moderate	Low	
Soil/sediment washing/dispersing into nearby catchments			✓	✓	1. All drainage/sediment treatments to be completed as per guidelines detailed in; "Managing Urban Stormwater: Soils and Construction" (4th Edition Landcom, 2004). 2. Trail tread/surface to be compacted incrementally during construction- no section longer than 50m to be left un-compacted 3. Trail naturalisation/rehabilitation to be completed incrementally with each section to be appropriately naturalised/rehabilitated as per agreed rehabilitation/revegetation plan (attached). No section longer than 100m to be left without rehabilitation 4. Top side batters to be hand finished with a maximum 70% slope. A 50% slope is to be targeted where viable/possible. 5. Down side dispersed soil to be naturalised incrementally during construction. 6. Rock armouring to be implemented where moderate-high volumes of cross-surface water flow or seepage is likely, at the approval from the principal 7. Silt fencing to be installed in areas where moderate-high volumes of cross-surface water flow or seepage is likely 8. Silt and sediment control measures to be removed incrementally as each section of trail is completed, including the completion of all compaction, surface grooming and rehabilitation/naturalisation 9. Rolling contour style of trail to be developed with grade reversals every <10m, ensuring no concentrated/high velocity water flows across the trail tread 10. All creek crossings to be fitted with rock armouring, including armouring to entry and exit points beyond the wet area 11. Grade reversals/drainage measures to be installed at the entry and exit to each creek crossing to limit water flow onto and into the water course 12. Silt fencing to be installed at the low side of each creek/wet crossing

					13. All silt fencing to be inspected daily and post any wet weather event 14. Work to be ceased if wet weather poses a risk for sediment/run-off during construction 15. Silt/run off collected in traps to be utilised on the trail tread, or relocated and rehabilitated as per rehabilitation/naturalisation plan 16. Water courses and wet areas to be avoided during final design where possible, with an aim to restrict these crossing to the minimum required to establish the alignment 17. Soil stockpiles not to be used unless strictly required 18. Soil stock piles to be covered and to have silt fencing installed when utilised 19. No vegetation or non viable soil (spoils) to be moved or dispersed into a waterway, wet area or area with potential for high-volume water flow 20. Erosion and sediment control measures (silt fencing/coir logs etc.) to remain in place until rehabilitation works are completed, and trail surface is firm, compacted and stable.
Trail wear/erosion upon opening/use			✓	✓	1. Installation of frequent grade reversals to reduce rider speed and limit water flow on the trail tread 2. Use of the IMBA 'half rule' restricting trail gradient to no greater than half the slope of the hill 3. Limiting average trail gradient to less than 10% (target 3-5% maximum average for any trail section) 4. Rock armouring is to be installed in steep (20%+) and/or high-wear trail sections, at the agreement and/or direction of the principal
Damage to water quality through chemical spill and related incidents			✓	✓	1. All machinery to be refuelled as per safe operating procedures 2. All machinery and equipment to be in good operating condition, with no leaks. Spill kits to be available on site at all times 3. All staff to be trained in the correct use of spill kits 4. All run off from cleaning of brushes, tools, equipment etc is to be contained and removed from site. 5. All on site fuel to be stored in a secure bund, away from waterways

✓ Pre- control risk

✓ Post- control risk

7.6 Ground water management

FACTOR	RISK ASSESSMENT OUTCOME				CONTROL MEASURES SUMMARY
	Extreme	High	Moderate	Low	
Risk of ground water contamination			✓	✓	1. Ensure all machinery maintained and serviced. 2. Inspect all machinery before operation for fuel, oil or hydraulic fluid leaks. 3. Re-fuelling only as per project management controls 4. Spill kits to be maintained on site at all times 5. All staff to be trained in the use of spill kits 6. All spills to be immediately reported to the principal

✓ Pre- control risk

✓ Post- control risk

7.7 Weeds and pests risks and controls

FACTOR	RISK ASSESSMENT OUTCOME				CONTROL MEASURES SUMMARY
	Extreme	High	Moderate	Low	
Risk of weeds brought into the site			✓	✓	1. All excavators and related machinery to be thoroughly washed before entry to the site. Machinery and equipment to have no soil and/or organic material present on entry to the site 2. All hand tools and related equipment to be thoroughly washed before entry to the site. All hand tools and related equipment to have no soil and/or organic material present on entry to the site 3. All vehicles used on the site (including mountain bikes) to be thoroughly cleaned prior to entering the site 4. Erosion and sediment to be minimised as per erosion and sediment control plans 5. All soil/gravel/related materials transported into the site to be weed free. Materials only to be brought to the site from approved supply and to be approved by the principal 6. All staff to use the hygiene station at the site entry upon each entry/exit to/from the site

✓ Pre- control risk

✓ Post- control risk

7.8 Chemical spill/contamination risks and controls

FACTOR	RISK ASSESSMENT OUTCOME				CONTROL MEASURES SUMMARY
	Extreme	High	Moderate	Low	
Risk of fuel spill			✓	✓	1. All fuel to be transported and stored in secure/approved containers 2. Fuel stored on site to be in a secure bund 3. All machinery and equipment to be refuelled in open, flat areas as per relevant procedures 4. Spill kit to be kept on site at all times 5. All staff to be trained in spill kit use 6. All spills to be reported to the principal
Risk of fuel/contaminant leakage from machinery/ equipment			✓	✓	1. All machinery to be serviced and in good working order prior to entering the site 2. All machinery and/or equipment to be inspected daily for leaks and/or damage 3. Leaking/damaged machinery and/or equipment to be removed from service and repaired 4. No machinery and/or equipment to be serviced on site. Emergency service /repair on site not to be completed without prior approval from the principal
Risk of chemical spill			✓	✓	1. No chemicals to be stored on site
General chemicals management			✓	✓	1. Chemical use to be limited to that strictly required by the project 2. MSDS to be kept on site for all chemicals 3. All chemicals to be stored as per MSDS and site/project policies

✓ Pre- control risk

✓ Post- control risk

7.9 Noise and vibration risks and controls

FACTOR	RISK ASSESSMENT OUTCOME				CONTROL MEASURES SUMMARY
	Extreme	High	Moderate	Low	
Ground vibration			✓	✓	1. Excavation to be restricted to the minimum required by the project 2. Excavator size/weight to be reduced to the minimum required for the project (1.7 tonne) 3. Works to be completed only during agreed work hours 4. Machinery to be turned off at idle when not in use
Airborne noise			✓	✓	1. All machinery and/or equipment use to be restricted to the minimum required by the project 2. Machinery to be turned off at idle when not in use

✓ Pre- control risk

✓ Post- control risk

7.10 Waste management risks and controls

FACTOR	RISK ASSESSMENT OUTCOME				CONTROL MEASURES SUMMARY
	Extreme	High	Moderate	Low	
Human waste contamination			✓	✓	1. Toilets to be utilised for all solid waste 2. Liquid waste to be excreted a minimum of 200m from any waterway
General waste			✓	✓	1. All general and food refuse to be stored safely on the site and removed daily. This excludes steel and associated off cuts during platform construction, which would be safely stored and removed when viable to do so (via air or trail) 2. All food stuff waste to be safely stored and removed from the site daily
Flagging tape and related waste			✓	✓	1. All flagging tape and pin flags to be removed, bagged and removed from the site

✓ Pre- control risk

✓ Post- control risk

7.11 Staff and contractor management

FACTOR	RISK ASSESSMENT OUTCOME				CONTROL MEASURES SUMMARY
	Extreme	High	Moderate	Low	
All staff/contractors aware of CEMP			✓	✓	1. All staff/contractors to be inducted to the site, including induction in relation to the environmental factors, issues and controls of the site 2. All staff /contractors to receive a specific EMP induction
All staff/contractors agree to abide by CEMP at all times			✓	✓	1. All staff/contractors to sign the CEMP as acknowledgement that they will abide by the project controls at all times 2. Responsibility for adherence to the CEMP to be managed by the *Dirt Art* site project manager (Operations Manager) and off site Senior Project Manager

✓ Pre- control risk

✓ Post- control risk

7.12 Cultural heritage disturbance risks and controls

FACTOR	RISK ASSESSMENT OUTCOME				CONTROL MEASURES SUMMARY
	Extreme	High	Moderate	Low	
Disturbance to aboriginal cultural heritage			✓	✓	1. Final trail design to locate trail away from noted aboriginal cultural heritage 2. Areas of cultural significance to be avoided that are close to trails will be fenced off from works with flagging tape and clearly marked as no-go areas. 3. Staff and contractors to be made aware of any known cultural heritage sites near to the trail alignment 4. All staff and contractors to be inducted by (the principal) as to the potential types of cultural heritage that may be found 5. Where any cultural material as listed in the CHMP is identified, all works will cease and temporary safety webbing or fencing erected without ground disturbance at a distance of 10 metres (buffer zone) around the location of the suspected Aboriginal cultural heritage, with signage displayed clearly identifying the location as a 'no-go zone'. Work may continue in other parts of the trail network outside of the buffer zone. 6. The site supervisor must immediately notify the principal of any finds of suspected Aboriginal cultural heritage to enable the notification of the Heritage Advisor and the RAP within two working days. A Heritage Advisor and an RAP representative will inspect the reported discovery as possible to determine if it is Aboriginal cultural heritage. If the reported discovery is determined not to be Aboriginal cultural heritage by the Heritage Advisor and the RAP representative, the activity may recommence.
Disturbance to European heritage			✓	✓	1. Final trail design in heritage areas to minimise the impacts to mature Oak trees. 2. No established trees (greater than 100mm DBH) to be removed 3. The Principal may approve the removal of larger trees or limbs after a hazardous tree risk assessment has recommended tree removal.

					4. Staff and contractors to be made aware of any known cultural heritage sites near to the trail alignment 5. All staff and contractors to be inducted as to the potential types of cultural heritage that may be found

✓ Pre- control risk

✓ Post- control risk

8 Staff agreement

Employee Sign-off Register			
Name	**Date**	**Signature**	**Notes**

9 Contractor agreement

Contractor Sign-off Register

Name	Date	Signature	Company	Notes

10 Glossary of key terms

Act
A law (legislation) passed and enacted by a state or territory parliament, also commonly known as an Act of Parliament. Acts are the principal pieces of law covering, in this case, environmental protection.

Bunding/bund
A retaining system designed to contain the contents of a tank or chemical storage in the event of a rupture/spill or leak

Contractor
A contractor is any person (other than an Dirt Art employee) or a company performing work for, or on behalf of Dirt Art

Decibel
A unit used to measure the intensity of a sound or the power level of an electrical signal by comparing it with a given level on a logarithmic scale.

Eco-footprint
The amount of productive land appropriated on average by each person (in the world, a country, etc) for food, water, transport, housing, waste management, and other purposes

Ecological
The science of the relationships between organisms and their environments

Epidemiological:
The branch of medicine, that deals with the study of the causes, distribution, and control of disease in populations.

Geotechnical sampling:
Principles of soil mechanics and rock mechanics to investigate subsurface conditions and materials; determine the relevant physical/mechanical and chemical properties of these materials; evaluate stability of natural slopes and man-made soil deposits; assess risks posed by site conditions; design earthworks and structure foundations; and monitor site conditions, earthwork and foundation construction

Green Waste
Biodegradable waste that can be composed of garden or park waste, such as grass or flower cuttings and hedge trimmings, as well as domestic and commercial food waste.

Hazard
A hazard is a source or a situation with a potential for harm in terms of human injury or illness, damage to property, damage to the environment, or a combination of these

HEPA Filter:
A High Efficiency Particulate Absorbing filter is a type of high-efficiency air filter that can effectively trap pollutants.

L_{A90} noise levels
Those noise levels that are exceeded for 90% of each sample period

Material Safety Data Sheet (MSDS)
Information containing data regarding the properties and effects of a particular substance that must be provided, by the manufacturer, supplier or importer of the hazardous substance/dangerous goods. MSDS must be current – within 5 years of the issue date and meet specific legislated format requirements.

OEH
Office of Environment and Heritage, NSW (The Principal)

Particulates:
Fine liquid or solid particles, such as dust, smoke, mist, fumes or smog, found in air or emissions.

Regulations
Regulations are law that is created under the authority of an Act. Regulations are subordinate to an Act and are the secondary level of law covering, in this case, environmental protection.

Risk
Risk is a combination of the likelihood and consequences of any incident or impact occurring.

Toxicological
The study of the nature, effects, and detection of poisons and the treatment of poisoning.

Water table:
Underground - the upper limit of the portion of the ground wholly saturated with water. The water table may be within a few inches of the surface or many feet below it

Weather Inversion
A temperature inversion is a thin layer of the atmosphere where the normal decrease in temperature with height switches to the temperature increasing with height. An inversion acts like a lid, trapping the atmosphere, including pollutants, below the inversion, allowing them to build up.

11 Related policies

11.1 Flora and fauna management

Dirt Art will endeavour to ensure minimal adverse impacts on local and adjoining ecosystems, in relation to terrestrial and aquatic flora and fauna resulting from work tasks.

***Dirt Art* is committed to limiting environmental impact from the following:**

- Loss of habitat and biodiversity
- Weeds or noxious species infestation
- Erosion from vegetation clearing
- Spills and leaks
- Damage or death to individual trees from direct damage or changes to water availability
- Pollution of waterways allowing aquatic weeds, toxic alga blossoms, and loss of water quality from excess sediment entering waterways

Objectives:

- Reduce/ prevent degradation of water and land habitats for native species
- Re-vegetate affected areas with appropriate indigenous species if required
- Provide habitat restoration if required

***Dirt Art* will meet these objectives by:**

- Development of flora and fauna management program specific to job. Including:
    - Review of flora and fauna components in planning documentation

- Liaison with ecological experts, community groups and State Environmental Authority to determine type of species likely to be impacted
- Ensure no activities are undertaken that place threatened species at risk (advice will be sought from relevant Authority)
- Development of “Threatened Species Monitoring Program” where relevant
- Establishment of re-vegetation / habitat restoration programs
- Allocate responsible persons to monitor, determine non-compliance, review and update the program as required

- Providing clear information (including markings on a site map) to indicate limits of vegetation clearing and disturbances
- Ensuring spoil piles with weeds will be maintained at least 25m from water courses and native vegetation
- Obtaining the services of suitably qualified persons to inspect tree hollows for fauna and provide advice on appropriate re-housing / habitat restoration
- Provide training for staff, including contractors on work practices to minimise potential damage to native flora/fauna, minimise soil disruption, and appropriate weed management practices.

References:

NSW Office of Environment and Heritage: (1995) Threatened Species Act
NSW Office of Environment and Heritage: (1997) Fisheries Management Amendment Act
NSW Office of Environment and Heritage: (1979) Environmental Planning and Assessment Act
NSW Office of Environment and Heritage: (1974) National Parks and Wildlife Acts
NSW Office of Environment and Heritage (1993) Noxious Weeds Act
NSW Office of Environment and Heritage: (2003) Native Vegetation Act
EPA SA: (1089) Soil Conservation and Land care Act
EPA SA (1992): Endangered Species Protection Act
EPA SA: (1975): National Parks and Wildlife Conservation Act
AS 1940 – 2004: The storage and handling of flammable and combustible liquids
Commonwealth Environment Protection and Biodiversity Conservation Act, 1999 (EPBC Act)
NSW Office of Environment and Heritage: (1997) Protection of Environmental Operations Act (PEOA)
EPA SA: (1993) EPA Act
EPA Victoria: EPA Act 1970
EPA Tasmania (2007) Environmental Management and Pollution Control Amendment Act

EPA Australian Capital Territory (1997) EPA Act
EPA Western Australia (1986) EPA Act
EPA Northern Territory (2010) EPA ACT

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11.2 Surface water and spoil management

Dirt Art will endeavour to reduce the occurrence of salinity, reduction in water and soil quality and erosion as a result of work activities.

Objectives:

- To ensure efficient controls are implemented to control erosion, sedimentation and impacts on water quality.

The objectives will be met by implementing the following:

- Identify work practices that may negatively impact soil or water quality, assess the risk and implement controls using best practice technologies.
- Identify likely receptors (nearby waterways, stormwater drains, wetlands, sensitive ecosystems)
- Obtain the services of suitably qualified persons (such as a Soil Conservationist), to advise on appropriate controls.
- Liaise with relevant communities and State Environmental agencies
- Divert undisturbed (uncontaminated) surface run-off in a manner to prevent erosion
- Test before work commences for baseline measures in relevant waterways (pH, oil/grease etc)
- Test regularly at agreed intervals and locations for changes in baseline readings that may be contributable to work activities.
- Prevent surface water from disturbed areas from entering waterways by use of sediment fences, straw bales sediment traps or other controls as required.
- Ensure all controls are in place before work commences
- Reclaim or recycle water wherever possible
- Create temporary or permanent sediment basins/traps if required and implement a program for regular inspection and cleaning
- Support existing drainage systems and provide extra draining systems if required
- Ensure on-site detention systems are sufficient capacity

- Implement re-vegetation with indigenous species as required
- Replace topsoil as close to its source location as possible
- Replace topsoil in sensitive areas as soon as possible
- Implement suitable weed control program (wash down of vehicles etc)
- All waste materials (drums, chemical containers, etc) to be stored in protected, bunded area well away from waterways
- Ensure all spills and leaks are cleaned up immediately and waste disposed of
- Ensure all contaminated soil/water removed by licensed contractor

References:

Commonwealth Environment Protection and Biodiversity Conservation Act, 1999 (EPBC Act)
NSW Office of Environment and Heritage: (1997) Protection of Environmental Operations Act (PEOA)
EPA SA: (1993) EPA Act
EPA Victoria: EPA Act 1970
EPA Tasmania (2007) Environmental Management and Pollution Control Amendment Act
EPA Australian Capital Territory (1997) EPA Act
EPA Western Australia (1986) EPA Act
EPA Northern Territory (2010) EPA Act
NSW Office of Environment and Heritage: (1995) Fisheries Management Act
NSW Office of Environment and Heritage: Water Management Act 2000
ANZECC and ARMCANZ (2000) Australian and New Zealand Guidelines for Fresh and Marine Water Quality
NSW Office of Environment and Heritage: (1997) Fisheries Management Amendment Act
NSW Office of Environment and Heritage: (1979) Environmental Planning and Assessment Act
NSW Office of Environment and Heritage: (1974) National Parks and Wildlife Acts
NSW Office of Environment and Heritage (1993) Noxious Weeds Act
NSW Office of Environment and Heritage: (2003) Native Vegetation Act
EPA SA: (1089) Soil Conservation and Land care Act
EPA SA: (1975): National Parks and Wildlife Conservation Act
AS 1940 – 2004: The storage and handling of flammable and combustible liquids
EPA SA: (1999) Stormwater pollution prevention Code of Practice for the building and construction industry
EPA SA: (1997) Water Resources Act

EPA SA: (1987) Pollution of Waters by Oil and Noxious Substances Act

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11.3 Noise and vibration management

Dirt Art is committed to ensuring noise/vibration from work activities does not adversely effect the community, buildings and structures

Objectives:

- Minimise the impact of noise / vibration to protect the amenity of sensitive receptors, such as local residents and prevent damage to buildings and structures.
- Identify possible sources of noise / vibration and likely exposed receptors, conduct risk assessments and apply best practice techniques to eliminate or reduce the environmental impact of noise / vibration
- Ensure *Dirt Art* is not responsible for community complaints regarding noise or vibration
- Ensure noise/ vibration legislation standards are not exceeded.

The objectives will be met by implementing the following as required for tasks:

- Develop and implement a Noise and Vibration program and allocate responsible persons to monitor, review and update the programs as required
- Liaise with sensitive communities/affected receptors and monitor community feedback. Provide a contact source for residents
- Liaise with State Environmental department
- Obtain the services of suitably qualified persons to conduct noise/vibration assessments to identify sources of noise/vibration and impacted areas
- Use assessment information to identify noise sources, clearly indicate these on a map (such as a contour map) and assess risk to receptors
- Prepare Noise /Vibration Impact Statements as required. Include the following:
    - All activities and schedules of work
    - Activities that have the potential to produce substantial noise/vibration or exceed legislated standards
    - Environmental and human impacts

- Receptors likely to be affected
- Intended controls and how these will be monitored
- Ensure copies are provided to relevant parties, such as property owners

- Seek permits from State Authorities as required
- Where noise levels exceed background L_{A90} noise level by 5 decibels, when measured at the most sensitive receptor, control measures to mitigate the impact will be implemented
- Provide adequate resources as required. Examples:
  - Suitable timing of works in line with permits and approvals
  - Erection of noise barriers
  - Engineering controls fitted to equipment (silencers etc)
  - Regular maintenance of all equipment
  - Machinery operated within manufacturer's recommendations
  - Provision of PPE for employees and contractors
  - Caution signage to indicate hearing protectors must be worn on site.
  - Implement Restricted Zones, where no vibration-inducing works will be undertaken in close proximity to buildings or structures as described in the table below:

Operations	Distance in Metres
7 tonne + machinery operation	50
Less than 7 tonne machinery operation	25

References:

Commonwealth Environment Protection and Biodiversity Conservation Act, 1999 (EPBC Act)
NSW Office of Environment and Heritage: (1997) Protection of Environmental Operations Act (PEOA)
NSW Office of Environmental and Heritage: (2010) PEOA (Clean Air) Regulations
EPA SA: (1993) EPA Act
EPA Victoria: EPA Act 1970
EPA Tasmania (2007) Environmental Management and Pollution Control Amendment Act
EPA Australian Capital Territory (1997) EPA Act
EPA Western Australia (1986) EPA Act
EPA Northern Territory (2010) EPA Act

11.4 Waste management

Dirt Art is committed to successfully conserving natural resources and is aware of the importance of waste management and reducing waste to landfill.

Objectives:

- To ensure the overall amount of waste is kept to a minimum.
- To ensure the handling, stockpiling and disposal of waste does not adversely impact the environment or community
- To ensure waste is disposed of meeting local, State and Federal requirements

***Dirt Art* will meet these objectives by the following:**

- Implementing the waste hierarchy:
    - Avoid
    - Reuse
    - Recycle/Re-process
    - Dispose
- Use of biodegradable and recycled/reprocessed substances and materials wherever possible
- Reuse materials wherever possible
- Development of purchasing procedures to ensure:
    - Number of items with expiry dates are kept to a minimum
    - Items have minimal packaging
    - Less hazardous products selected wherever possible
- Identify waste sources/ streams and develop a "Waste Management Register"
- Provide appropriate receptacles for each waste stream. Ensure these are labelled

- Conduct regular inspections/audits to ensure waste is separated as required
- Waste receptacles will not be stored in close proximity to sensitive areas such as waterways or stormwater drains.
- Follow manufacturer's instructions for disposal of chemicals (Material Safety Data Sheet) along with local waste disposal facility directions
- Chemicals waste will be stored in bunded areas
- Ensure green waste is re-processed (compost etc)
- Waste is not mixed with spoil
- Weeds and unhealthy plants removed as a result of earthworks will be separated from the spoil, labelled as waste and taken off-site for disposal
- Site toilets will be serviced regularly
- No Littering policy will be implemented. All litter will be picked up immediately and disposed of in appropriate receptacle
- Materials contaminated by leaks (such as fuel or oils) will be stored in a sealed container and transported to a suitable waste facility
- Incompatible wastes are kept separate
- Waste water collection and treatment system will be implanted as required. Contaminated water will be disposed of following State Authority requirements
- Water use will be minimised with the use of aerated taps, trigger action hoses, low flow nozzles, repairs of leaks. Water will be re-used where possible.
- Waste collection will be arranged at regular intervals to ensure no adverse impacts on the environment and community (such as overfilling of receptacles and subsequent littering, odour, pests or other disturbances)

References:

Commonwealth Environment Protection and Biodiversity Conservation Act, 1999 (EPBC Act)
NSW Office of Environment and Heritage: (1997) Protection of Environmental Operations Act (PEOA)
EPA SA: (1993) EPA Act
EPA Victoria: EPA Act 1970
EPA Tasmania (2007) Environmental Management and Pollution Control Amendment Act
EPA Australian Capital Territory (1997) EPA Act
EPA Western Australia (1986) EPA Act
EPA Northern Territory (2010) EPA Act
NSW Dangerous Goods (Road and Rail Transport) Act 2008
EPA WA (2004) Environmental Protection (Controlled Waste) Regulations
WA (2004) Dangerous Goods Safety Act
AS 3833 – 2007: The Storage and Handling of mixed classes of dangerous goods, in packages and intermediate bulk containers
AS 3780 – 2008: The storage and handling of corrosive substances
AS 1940 – 2004: The storage and handling of flammable and combustible liquids

11.5 Chemicals management

Dirt Art is aware of the damage that can be caused not only to sensitive ecological communities, but to birds, fish, flora and fauna in general and as such, are committed to reducing the environmental impact of chemicals that are required for work tasks.

Objectives:

- To ensure negative environmental impacts arising from the use, transport and disposal of chemicals, including fuel and oil are eliminated or reduced as far as possible.
- To ensure that exposure standards (where relevant) are not exceeded

The objectives will be achieved by the following:

- Develop a chemical management program including:
    - Purchasing procedure to include environmentally friendly products, and chemicals that are the least toxic to the environment and to humans as possible, while still performing its intended purpose.
    - Ensuring only minimal volumes ordered as required
    - Allocate responsible persons to monitor, review and update the program as required
    - Development of comprehensive emergency response procedures where flammable or toxic materials are stored or handled. This will include a 24/7 emergency contact person, responsible person, and detailed instructions for emergency response as relevant for type of materials stored
- Obtain Material Safety Data Sheets (MSDS) and other relevant ecological data for any chemicals used
- Conduct risk assessment for human and environmental impacts
- Use non-toxic or the least toxic (human and ecological) chemicals where possible
- Ensure correct disposal, including collection of run-off, waste water from clean-up as required
- Ensure conditions are safe to use (not used in high winds or close proximity to waterways or storm water drains, etc)
- Liaise with State Environmental department

- **Provide adequate resources. Examples:**
    - Local Exhaust systems
    - HEPA / adequate charcoal filters where required
    - Low volume spray nozzles
    - Spill containment and bunding equipment
    - Water re-containment equipment
    - Protective covers and /or screens
    - Suitable storage areas and containers
    - Suitable transport vehicles, containers and loading/unloading procedures and equipment
    - Licenses, permits and training as required
    - Personal Protective Equipment (PPE)
    - Atmospheric monitoring where required

References:

Commonwealth Environment Protection and Biodiversity Conservation Act, 1999 (EPBC Act)
NSW Office of Environment and Heritage: (1997) Protection of Environmental Operations Act (PEOA)
NSW Office of Environmental and Heritage: (2010) PEOA (Clean Air) Regulations
EPA SA: (1993) EPA Act
EPA Victoria: EPA Act 1970
EPA Tasmania (2007) Environmental Management and Pollution Control Amendment Act
EPA Australian Capital Territory (1997) EPA Act
EPA Western Australia (1986) EPA Act
EPA Northern Territory (2010) EPA Act
NSW Chemical Control Orders (CCO)
NSW Office of Environment and Heritage (1985): Environmentally Hazardous Chemicals Act
NSW Office of Environment and Heritage (1997) Contaminated Land Management Act
NSW Office of Environment and Heritage (2005) PEOA (Waste) Regulations
NSW Dangerous Goods (Road and Rail Transport) Act 2008

EPA WA (2004) Environmental Protection (Controlled Waste) Regulations
WA (2004) Dangerous Goods Safety Act
AS 3833 – 2007: The Storage and Handling of mixed classes of dangerous goods, in packages and intermediate bulk containers
AS 3780 – 2008: The storage and handling of corrosive substances
AS 1940 – 2004: The storage and handling of flammable and combustible liquids

11.6 Contractor management

All contractors and sub-contractors engaged to perform work on *Dirt Art* premises or other nominated locations, are required to comply with relevant Legislation, Standards, Codes of Practice and *Dirt Art's* Environmental management plans and programs.

Objective:

To incorporate EMP requirements into every stage of contractor selection, approval, work processes and completion.
Policy:

***Dirt Art* will allocate responsibilities as follows**:

- *Dirt Art* Contract Managers:
    - Review environmental impacts for job
    - Review contract to ensure environmental impacts are controlled

- *Dirt Art* Site Management:
    - Induction for contractors
    - Permits to work
    - Licenses, competencies
    - Risk assessment and EMP implementation
    - Supervision

- Contractor:
    - Evidence of EMP in place
    - Evidence of licenses, training and competency to perform work
    - Development and implementation of risk assessments, risk controls and EMP
    - Compliance with above
    - Compliance with Environmental legislation,
    - Participate in site meetings and site consultative arrangements

References:

Environmental Legislation in all States

11.7 Legislative change management

Dirt Art embraces opportunities to improve knowledge about new legislation and best practice solutions and technologies to reduce environmental impacts from work activities.

Objective

Dirt Art will pro-actively seek out advice, education and industrial knowledge to foster continual improvement in environmental management systems and updates of relevant legislation.

Policy

Dirt Art will endeavour to manage legislative change by:

- Assigning responsibilities for researching legislative changes with State and Federal Authorities
- Participate in learning opportunities such as information sessions provided by Industry Stakeholder Groups, Local Community Groups, and relevant Authorities.
- Seek advice from suitably qualified persons where required
- Attending conferences, trade shows etc where possible.
- Ensuring refresher training is undertaken where required
- Liaising with local Authorities as required

References:

Environmental Legislation in all States

11.8 Roles, responsibilities and accountabilities

Successfully managing environmental impacts relies on commitment, consultation and co-operation. Everyone needs to understand the need for mitigation controls, what their role is in reducing environmental impacts, and how they can fulfill their responsibilities and duties

***Dirt Art* allocates the following responsibilities:**

Managing Director:

- Approval of EMP's and environmental protection policies
- Communication of EMP and policies
- Leadership
- Allocating sufficient resources
- Reviewing performance
- Providing direction for increasing performance
- Establishing and promoting an environmentally aware culture

Project Manager:

- Integration of environmental considerations into all decision making
- Consult with employees and contractors
- Planning, developing, implementing, monitoring and reviewing EMP and environmental policies and programs
- Control risks
- Communication in relation to environmental plans, policies, programs
- Identify training needs and enable training as required
- Reporting and recording
- Liaise with relevant State Authorities
- Meet legislative requirements

All employees (including sub-contractors and employees of sub-contractors):

- Comply with EMP, environmental policies, procedures and programs
- Work in a manner that does not create unnecessary risks to the environment
- Report and assist to rectify hazards/non-conformances
- Participate in consultative arrangements

Relevant persons:

- Develop, monitor and review EMP, environmental policies and procedures
- Monitor and report on environmental performance
- Monitor changes in legislation
- Review Corrective Actions/Non-conformances
- Provide environmental information to employees

References:

Environmental Legislation in all States

11.9 Training, competency and awareness

Training is vital to assist employees to perform their work. *Dirt Art* will arrange training that covers environmental impacts related to tasks being performed, as well as training in the overall approach to environmental protection taken by the organisation.

Objective

To provide training to all employees and contractors to ensure they have the skills and competencies for work in a manner that does not create unnecessary risks to the environment.

Policy

***Dirt Art* will:**

- Conduct training needs analysis across the organisation
- Develop formal training needs and competencies for position requirements at all levels, including management.
- Develop a training schedule to manage the training needs and frequency of training
- Provide formal induction programs for new and transferred employees and contractors
- Use Registered Training Organisations (RTO) and appropriately accredited and approved courses/trainers
- Ensure training is competency based
- Record all training
- Review effectiveness of training
- Provide training for languages other than English and other relevant learning barriers

Training will include:

- All environmental policies, EMP and procedures for the organisation
- Licenses and competencies to perform tasks
- Specific hazards risk controls
- Consultation and communication arrangements
- Corrective actions and non-conformances
- Emergency Response (spill containment etc)

All managers and supervisors will be provided with additional training to ensure that they are aware of their responsibilities under the EMP and environmental management systems. This training includes legislative responsibilities for managers and supervisors.

References:

Environmental Legislation in all States

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