BMX race track

Concept

Project:

BMX race track
Southland BMX race track
Elizabeth Park
Invercargill, New Zealand

Concept

Client:

Southland BMX club

Designers:

Brett Barnes

Drawn:

Brett Barnes

Version:

Version #1
October 2019
Not for construction

Construction:

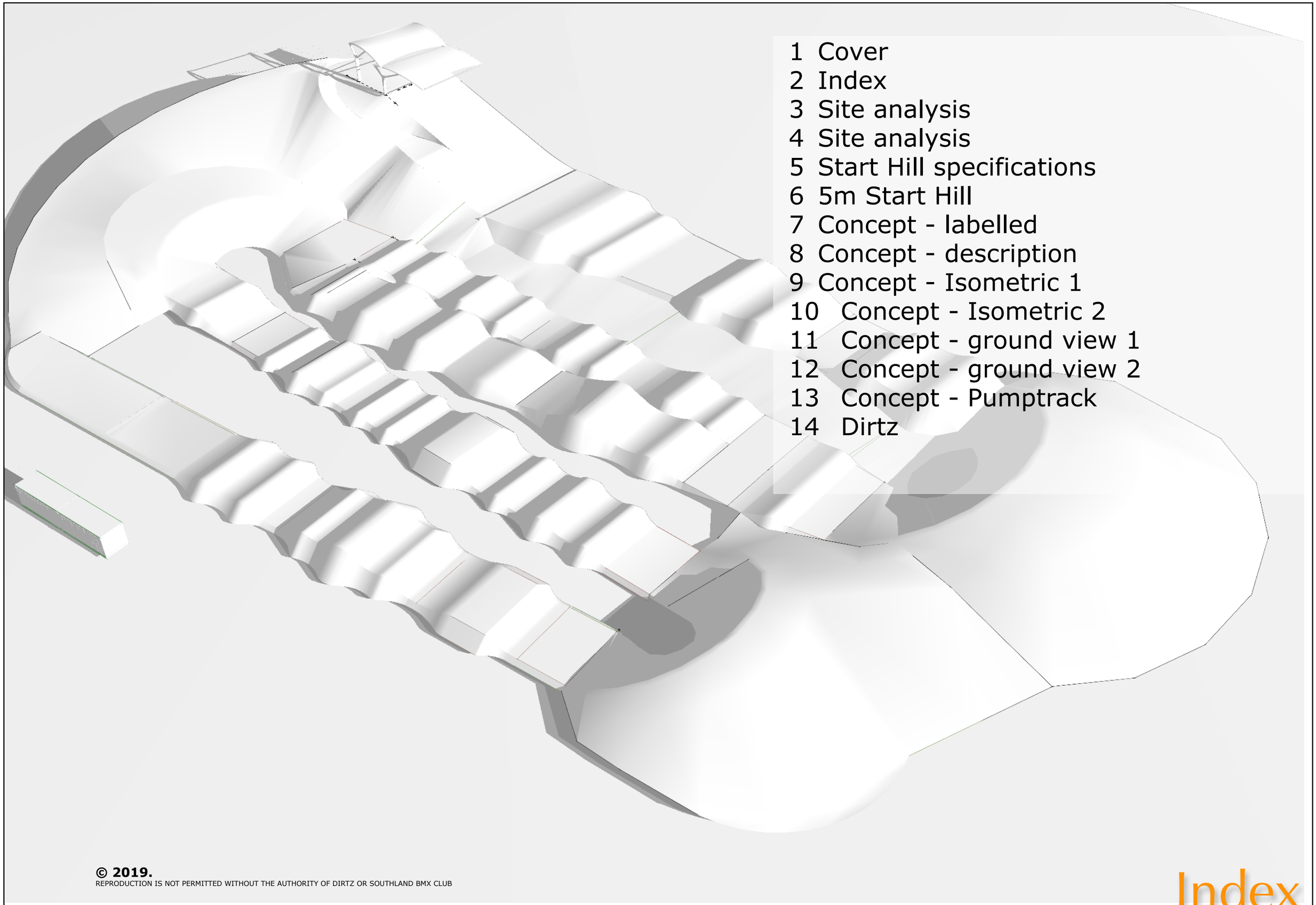
TBA

DiRtZ track
www.dirtztrack.com

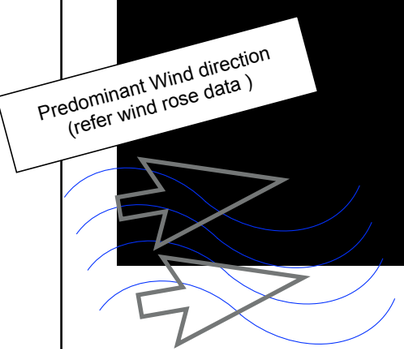
SOUTHLAND BMX club

ABN 13382776167

DirtzTraxnTrailz T/A Dirtz
www.dirtztrack.com
2/11 Strong Place,
Richmond. NSW. 2753.
0409 835 676



Index



The proposed site for the new Southland BMX race track is Elizabeth Park, Invercargill, NEW ZEALAND. The park lies immediately adjacent the current Southland BMX race track.

The proposed site would see the track boundaries of the track being Yarrow street to the north, Isabella street to the west. Vehicular and primary crowd access access would be gained via the south off Surrey Park road. It is envisaged that larger BMX events would see the utilisation of carparks within the surrounding sport and recreation hub.

The proposed site is at its widest 130m x 120m. The available area once UCI considerations, event management considerations and best practice for a race track layout & construction are taken into account, is bordering upon minimal for race track. Both concepts utilise the same track design however use the site in different ways.

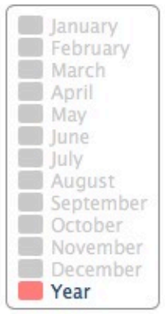
Site analysis

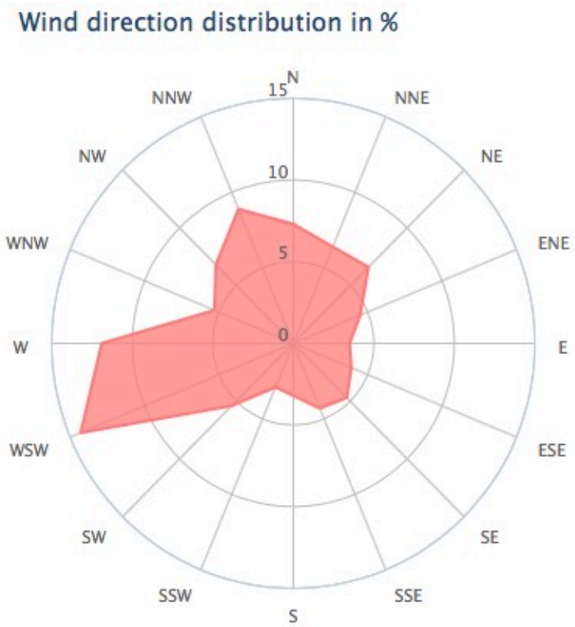
The consideration of site fall, weather and wind data is an important consideration for a modern BMX race track. Where possible these factors should be examined and the design reflective of best practice.

The adjacent data has been taken at the site of Invercargill airport, New Zealand, a short distance from the proposed Elizabeth Park site for the new Southland BMX track.

As can be seen, the predominant wind direction for all but three months of the year is a west south westerly wind. Fortunately the alignment of the concept track such that it lies perpendicular to the fall on the site, also sees the second and fourth straight with a predominant tail wind. The first straight will experience a head wind however the combination of the start hill and fall through the straight will assist to counteract the effect of the head wind.

Importantly the alignment of the concept on the site sees minimal chance of cross wind to riders. This addresses an important risk management consideration in designing a safe and enjoyable BMX race track.





Month of year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
	01	02	03	04	05	06	07	08	09	10	11	12	1-12
Dominant wind direction													
Wind probability >= 4 Beaufort (%)	47	39	34	33	26	28	26	25	38	48	46	42	**36**
Average Wind speed (kts)	12	10	10	10	9	9	8	8	10	12	12	10	**10**
Average air temp. (°C)	15	15	13	12	9	7	6	8	9	10	12	14	**10**

WIND STATISTICS

Statistics based on observations taken between 06/2004 - 07/2018 daily from 7am to 7pm local time. You can order the raw wind and weather data in Excel format from our historical weather data request page.

Site analysis

UCI (Union Cycliste Internationale) BMX Start Hill specifications
UCI BMX Track Guide – Version on 29th March 2017

Materials
There are no restrictions on the materials that can be used to build a start hill. However, the entire riding surface must be flat without significant gaps, cracks or bumps, and must be covered with a high-grip material.

The structure of the start hill must be strong and stable. Scaffolding start hills must be certified and inspected in accordance with the laws of the country in question.

The most common designs and construction materials include:
• Scaffolding with a wooden surface
• Concrete or asphalt surface backfilled with dirt
• Concrete surface with a building that houses storage and offices found in the space beneath

Requirements
• The start hill must have a high-grip riding surface that allows the riders to maintain traction in all weather conditions. This must extend from the gate to the bottom the start hill along its full width. In case a decal is installed on the start hill, it must have the same grip as the all other parts of the start hill surface across its entire width and length. All parts of the start hill riding surface must have a slip resistance value of at least 13.

• In case of a track with two start hills, they are normally placed at a slight angle to each other in order to allow the gate on each hill to be properly aligned with the first corner. It is best if this angle is between 5 and 10 degrees.

• The design of the 8m and 5m start hills must respect the dimensions and angles found in the plans provided by the UCI.
Start hills build before the revision date of this guide are exempt from this requirement.

• For outdoor tracks, there must be a drainage channel installed along the bottom edge of the start hill, this prevents water from pooling in this location during rain.

Tracks for Other Events
As described in the UCI Regulations, the start hill for other tracks must have a height of at least 2.5m above the grade of the first straight, and have a riding surface at least 10m wide; the incline extending from the starting gate to the level grade at the bottom of the start hill must have a length of at least 12m.
Other than the above regulations, there are no restrictions or other dimensions regulating the size and shape of the start hill for other events.

Start Hill Access
Unless built into the side of a hill, riders access the top of most start hills is with a staircase or a ramp. Depending on the height of the start hill, the stairs or ramp will likely switchback several times before reaching the top.

Requirements
• In case a ramp is used, the slope should be gradual enough so that the riders can push their bicycles up the slope without much effort. A ramp width of at least 1.5m is needed.
• In case stairs are used, the stairs should be wide and flat with a reasonably gentle grade, each stair should rise no more than 15cm to 20cm. A gutter or narrow ramp should be installed along one edge to allow bicycles to be pushed up rather than carried. Again, the stairs must be at least 1.5m wide.
• For stairs or ramps consisting of multiple flights, a landing should be installed between each flight to allow a level resting space.
• The stairs or ramp must have a railing for their full length, which has enough cross-pieces to prevent falls, even from small children who aren't as tall as the highest level of the railing.

Staging Space
There should be enough space immediately behind the starting gate for two complete heats of riders to be staged – that is, one in the gate, and 2 heats waiting behind the gate.

Start Hill specifications

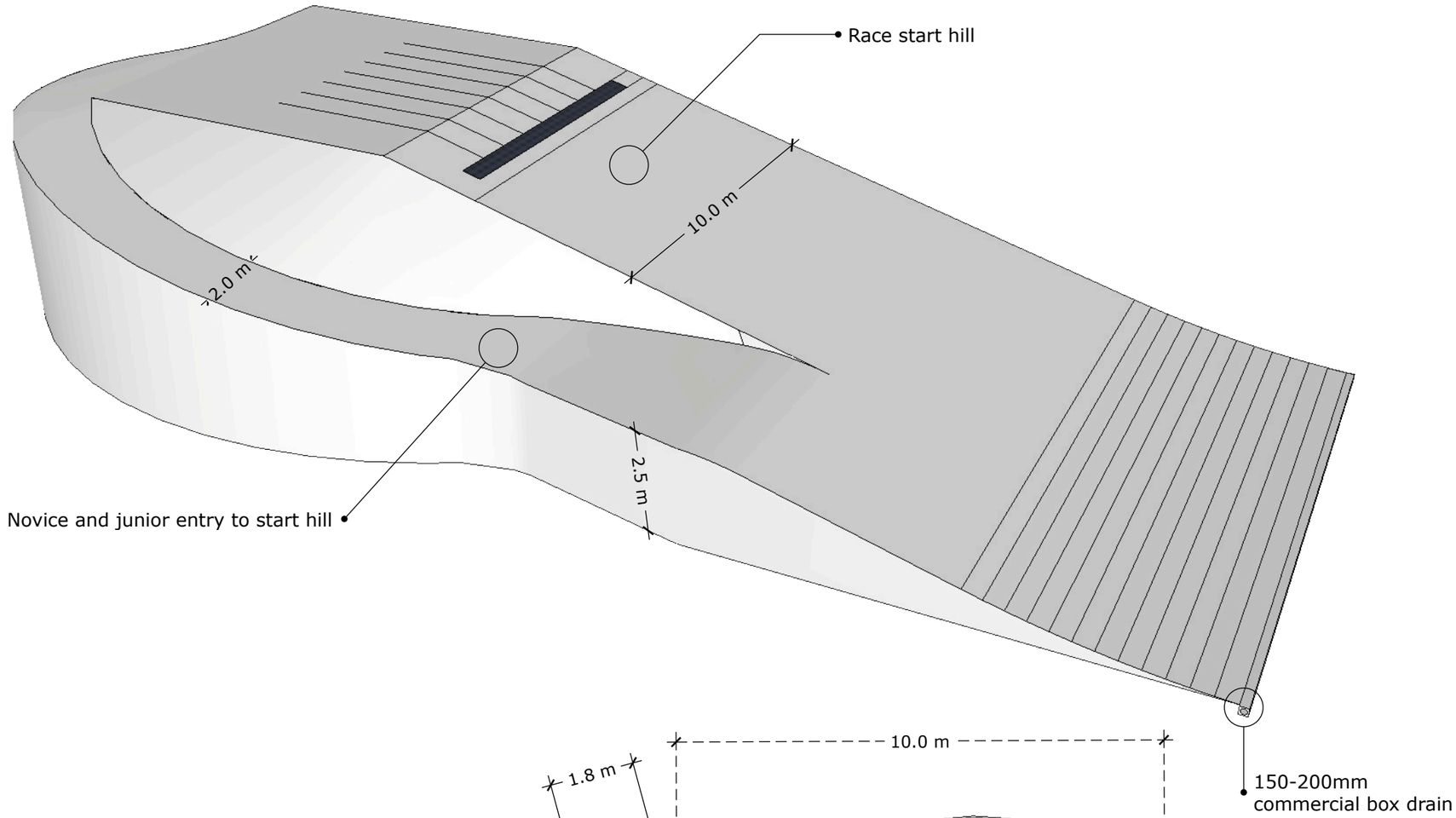
Following consultation with he Southland BMX club, the preferred type and construction of the start hill for the Elizabeth Park, Southland BMX facility is a 5m start hill of earth construction.

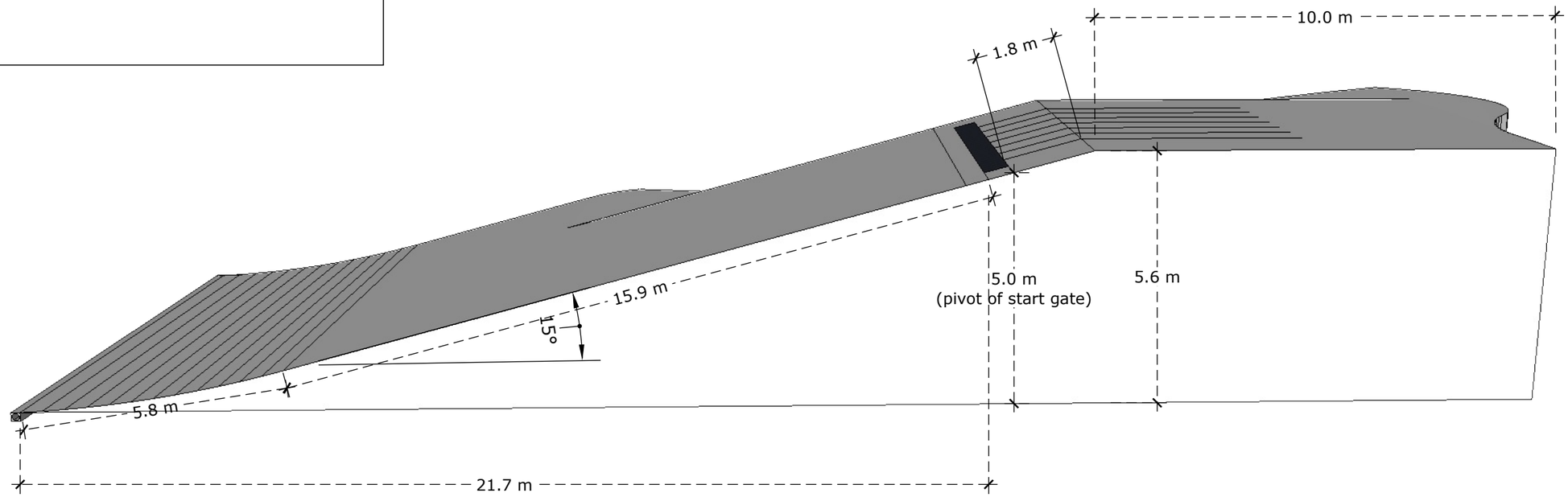
The standard UCI challenge start hill is a 5m hill with a 15/20 degree angle change on the hill. Keeping in mind the many junior riders and public access of the Southland facility, the club has preferred the 5m start hill with a straight 15 degree angle. The removal of the 20 degree start hill allows for a much less intimidating experience for novice riders. In addition a secondary narrower start hill for very novice riders has been requested, mostly for public access and junior coaching.

The adjacent diagrams detail the specifications of the face and profile of the 5m start hill. The final construction of the face and top of the start hill will be subject to availability of product and costing. Options include:
Start Gate: Pro Start, Pro Gate, Bensink or locally manufactured,
Start hill face: Concrete, Concrete/Asphalt mix, Asphalt
Staging area: Concrete or Asphalt

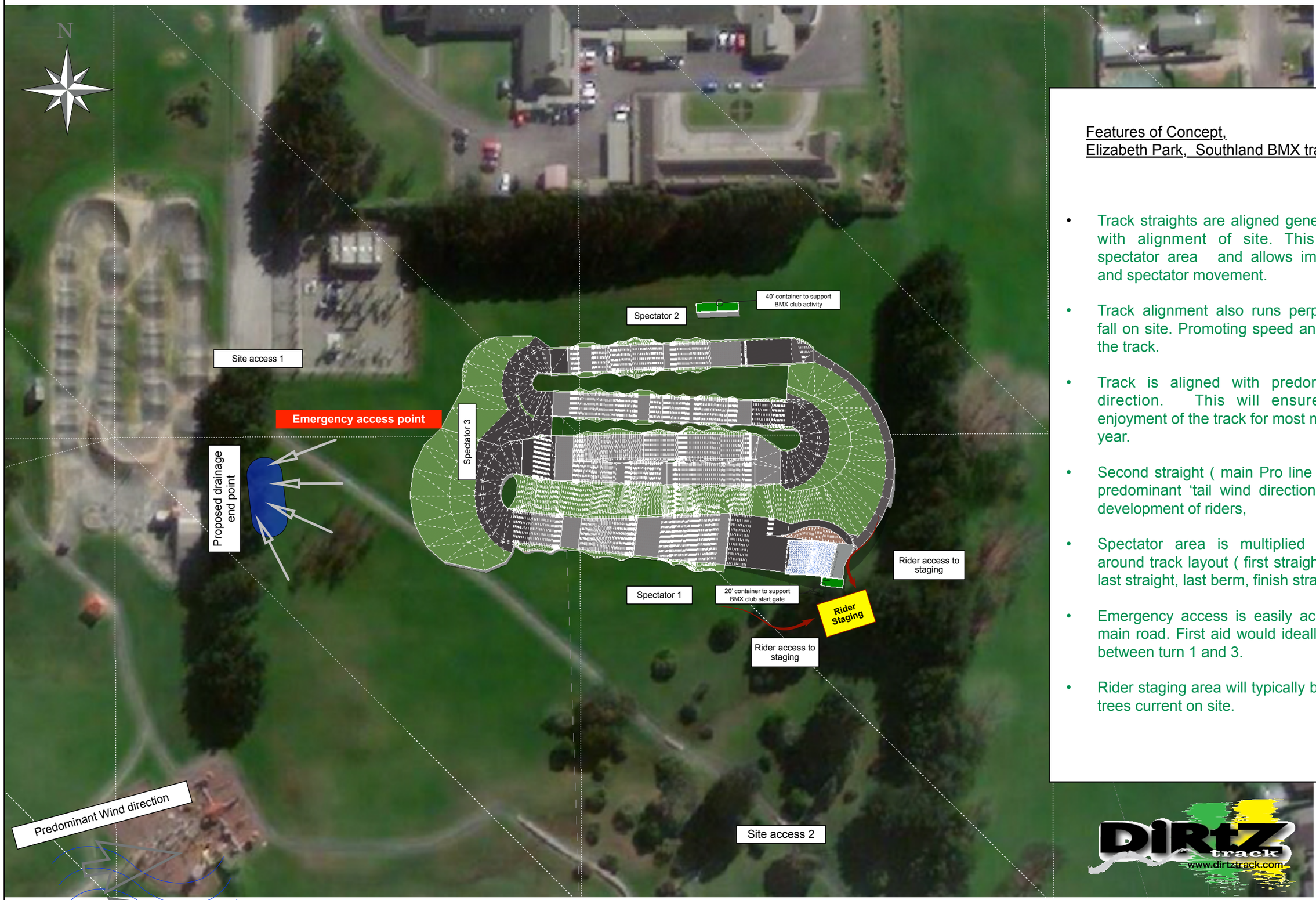
Start hills should be completed preferably by companies experienced in construction of BMX start hills.

Proposed rider access is from the south east. Return access is from north directly form the finish line area





5m Start Hill specifications



Features of Concept,
Elizabeth Park, Southland BMX track

- Track straights are aligned generally parallel with alignment of site. This maximises spectator area and allows improved rider and spectator movement.
- Track alignment also runs perpendicular to fall on site. Promoting speed and flow within the track.
- Track is aligned with predominant wind direction. This will ensure maximum enjoyment of the track for most months of the year.
- Second straight (main Pro line) aligns with predominant 'tail wind direction. Supporting development of riders,
- Spectator area is multiplied and shared around track layout (first straight, first berm, last straight, last berm, finish straight).
- Emergency access is easily accessed from main road. First aid would ideally be located between turn 1 and 3.
- Rider staging area will typically be shaded by trees current on site.

Concept aerial - features, pros & cons

Description
Elizabeth Park, Southland BMX track

- Start Hill: proposed as a 5m/15 degree earth based construction*. This will be built into the site and reduce the requirement for importation of material.

- First straight: has level drop through first jump, this increases rider speed. Second jump is double followed by large step-up into first corner.

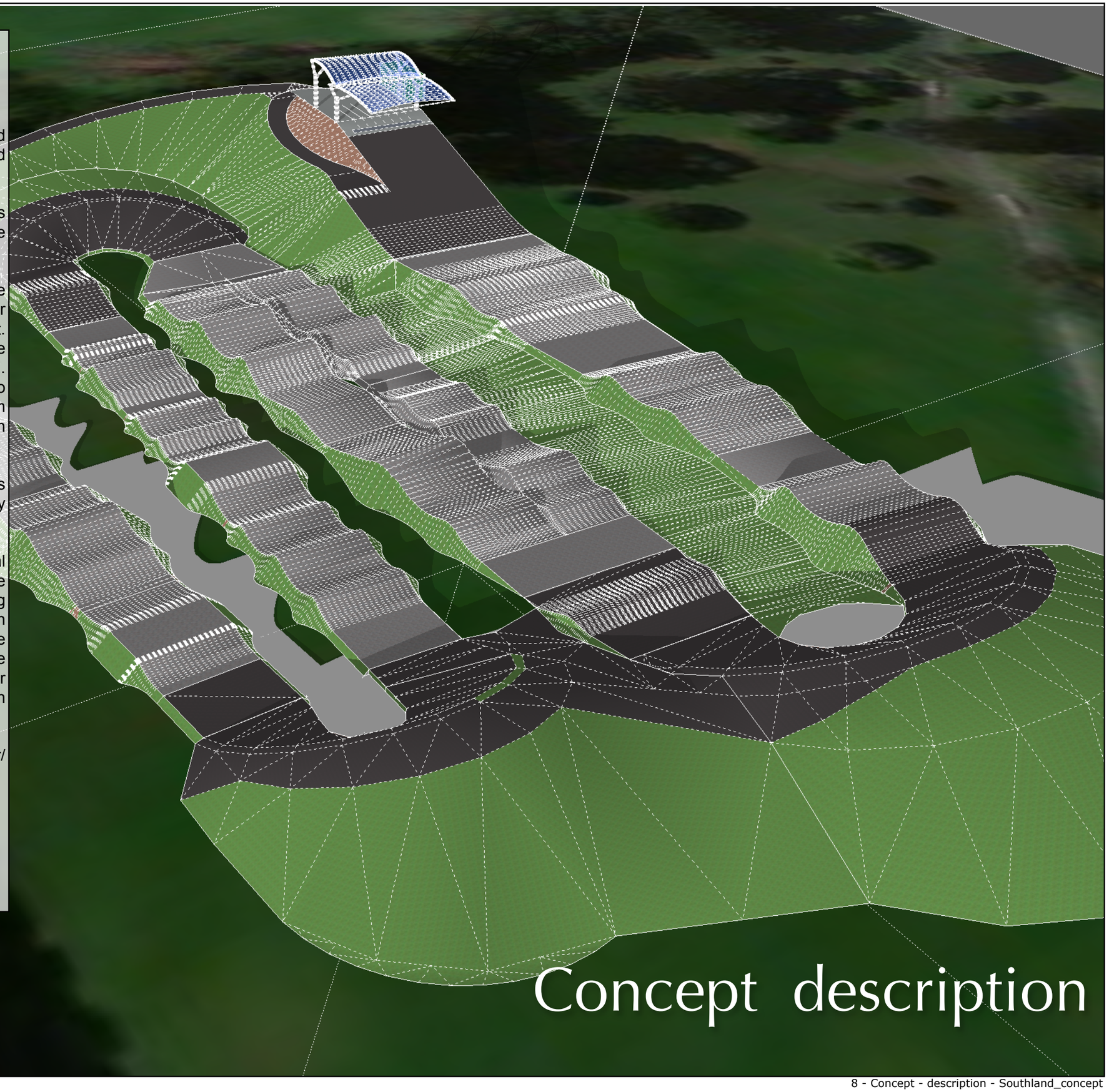
- Second straight: beginning is common to improve first corner and allow better access to either challenge or elite section further down the straight. Common section is a 'drop single' again utilising the fall in the site and increasing rider speed and 'flow'. Elite split: is 8.5m-9m step up into pump roller into Double with tail. Challenge split: is approx 6.0m step up into low high speed double into combination step / step down (jump in / jump out).

- Third straight is a combination rhythm straight. This provides highs and lows and offers riders many different ways to get through it.

- Sprocket straight(TBA): this is not part of the 'official race track' however could be utilised for balance bike racing. It is half track width and allows young riders and opportunity to learn to get their wheels in the air for the first time or perhaps begin to move from pump, jump or manual combinations. This type of straight has been installed by Dirtz at other facilities and has proven a huge success. Location to be advised.

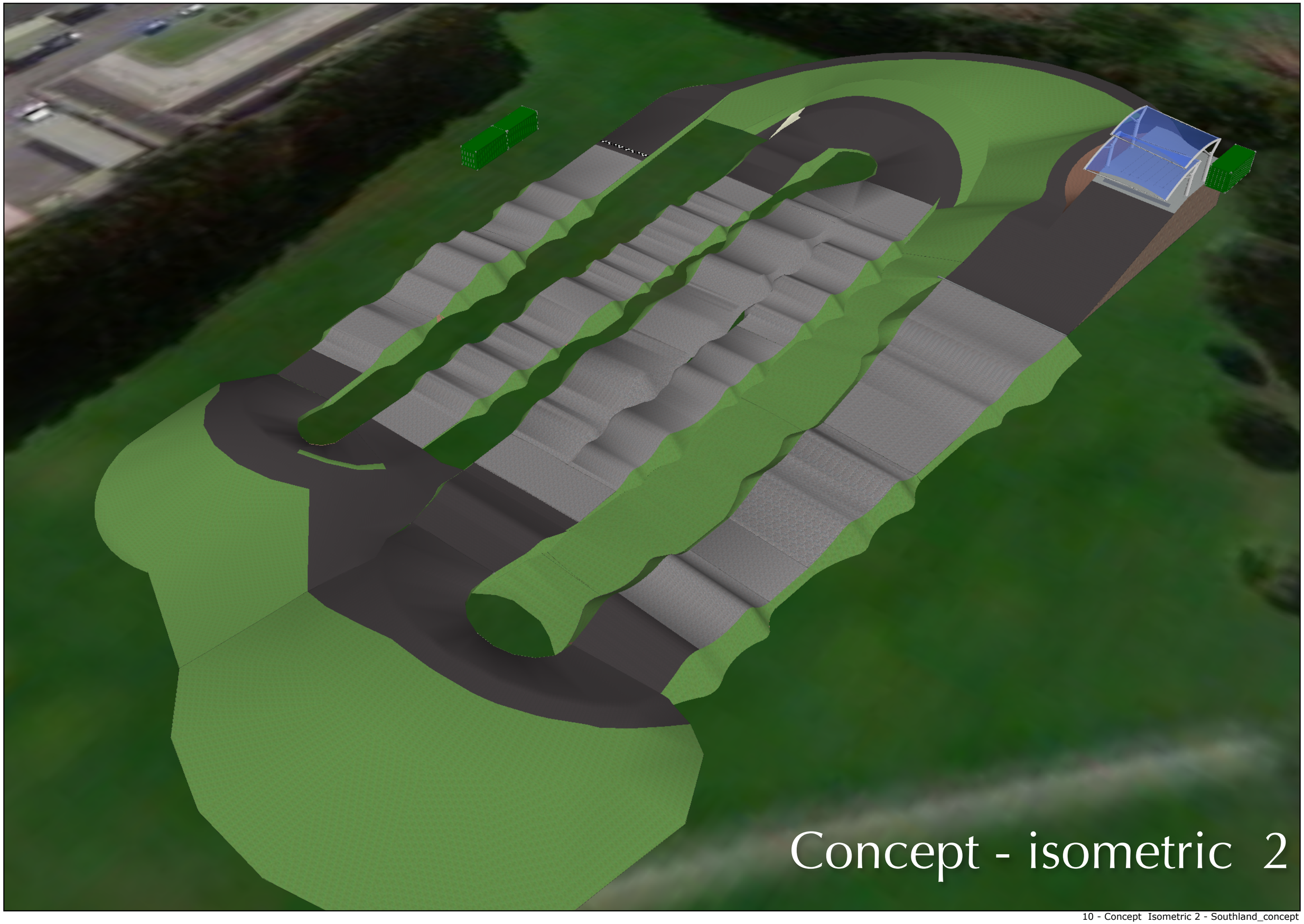
- Finish straight: table top into low roller/high roller/ low roller into pump roller into table top into double

** engineered design drawings required from a qualified source*
*** all final lengths and heights are subject to rider testing during the construction phase.*

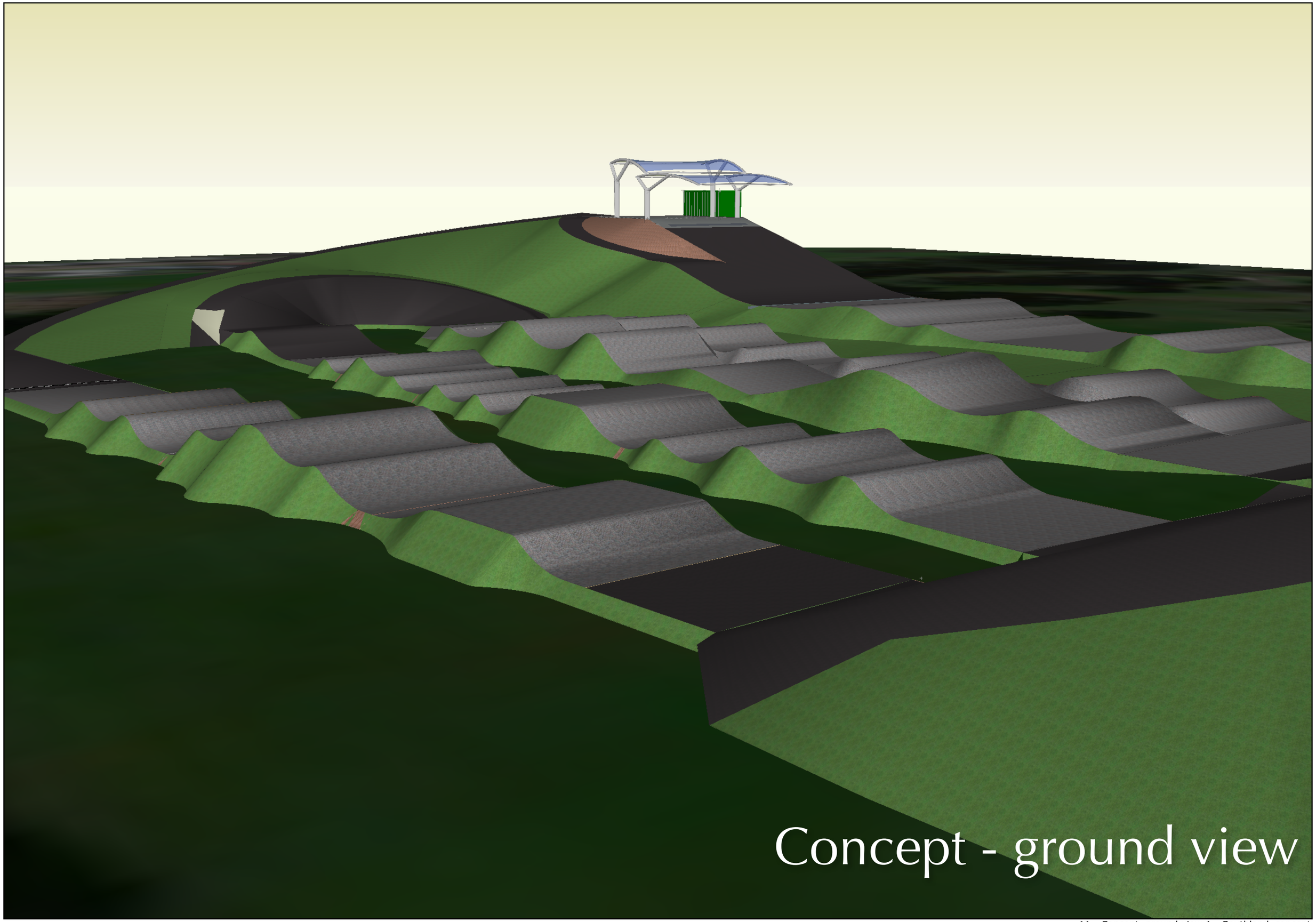


Concept description

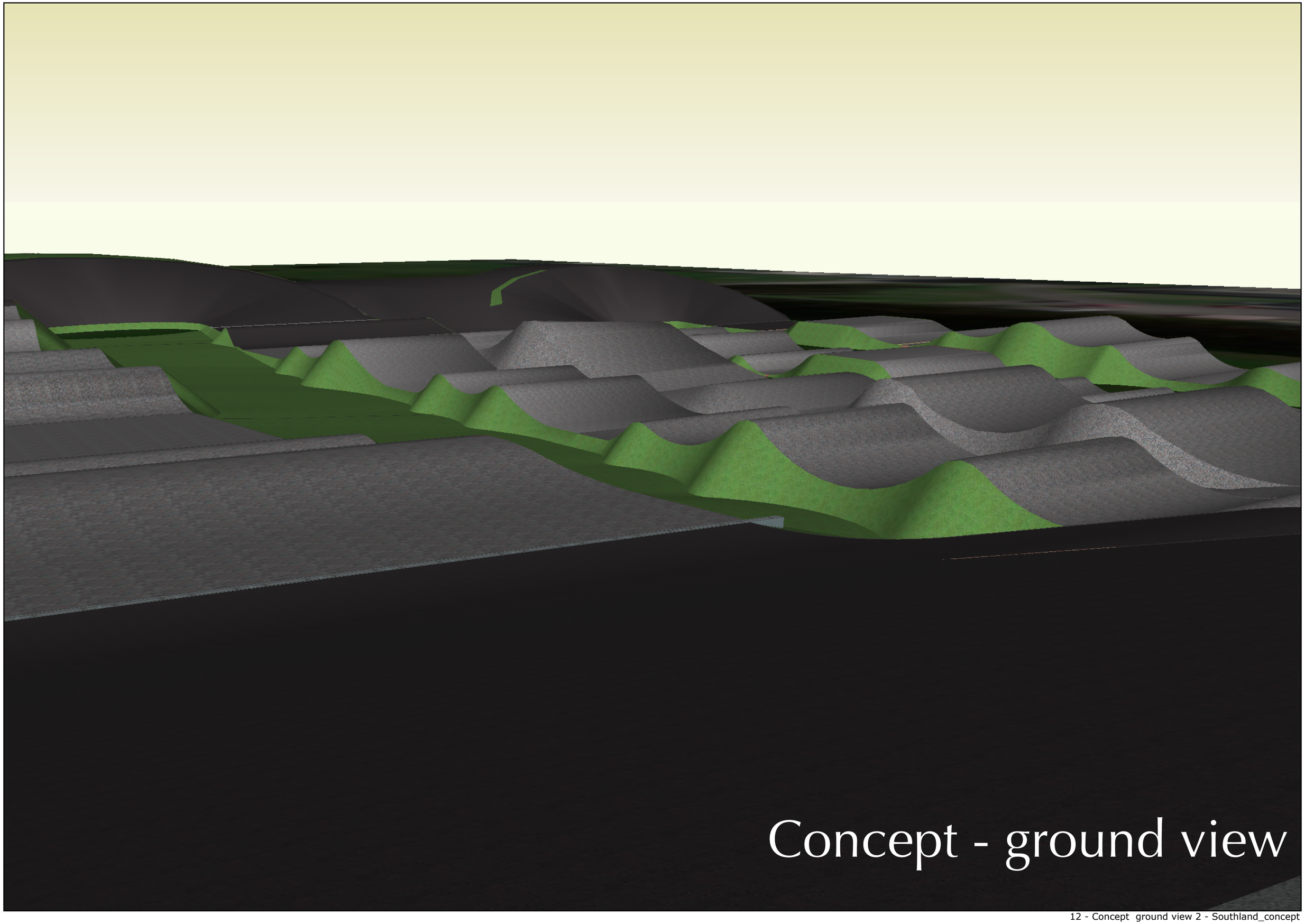
9 - Concept Isometric 1 - Southland_concept



10 - Concept Isometric 2 - Southland_concept
1. Elizabeth Park



11 - Concept ground view 1 - Southland_concept



12 - Concept ground view 2 - Southland_concept
1. Elizabeth Park

Inclusion of Pump Track:

- A pump track adds a level of diversity to a BMX track that broadens the appeal of the facility ten fold. Juniors riders on balance bikes will roll happily around a pumptrack while elite riders will also get the same level of enjoyment from the very same facility.

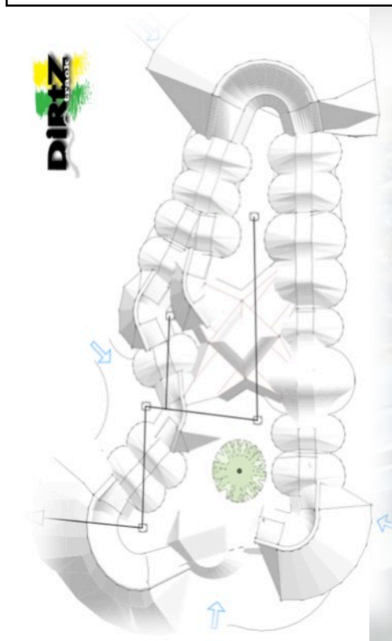
- In order to keep maintenance to a minimum and further diversify the appeal, it is Dirtz recommendation that a pumptrack be completed with an asphalt surface (7mm AC residential). This enables scooters and skateboards tools utilise the facility but more importantly ensures virtually zero maintenance for clubs and councils. The additional cost is to asphalt a facility is usually between $15-$45,000, depending on size and availability.

- With the recent announcement of pump track as a UCI recognised discipline, the addition of this type of facility to the venue all opens up the town to host UCI and various Redbull Pumptrack competitions.

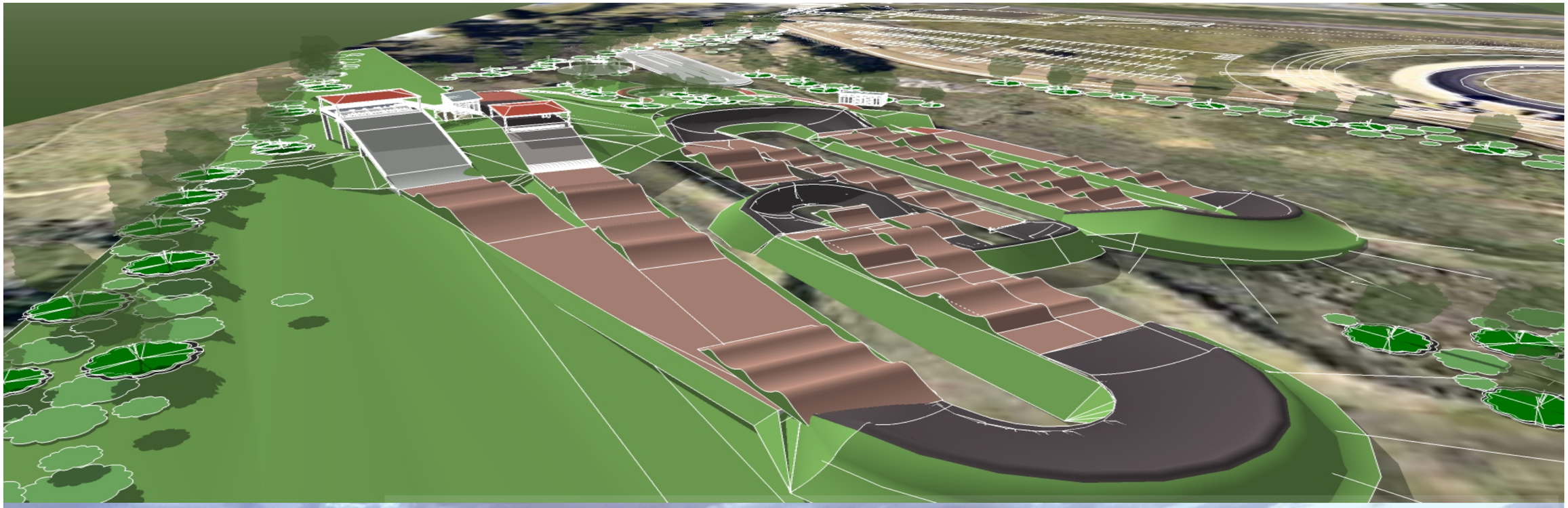
- Pumptrack open a BMX track into an even more appealing recreational venue outside of organised events, giving the town real value for money in the facility.

A Pumptrack is essentially a rollercoaster path that, if designed properly, allows the rider or skater to complete the course essentially without any pedalling or drive.

Pumptracks have gained increasing popularity throughout Europe because of their diverse appeal, safety and ability to hold attractively into almost any environment.



Concept - Include Pumptrack



Dirtz specialises in the design and construction of all off road cycling facilities.
...We do nothing else.

DIRTZ track
www.dirtztrack.com

To date we have designed & built competitive and recreational mountain bike and BMX facilities all over Australia and Asia. Our advertising and self promotion is minimal as the good word of mouth from our many projects is more than sufficient to keep us busy. We believe this speaks volumes about what we do.

Key to suggested areas covered by lighting poles

1. Start Hill & staging: track and rider staging area lighting
2. First straight track and spectator lighting
3. First corner track and spectator lighting
4. First, second and third straight track lighting only

NB: due to the fall within the track layout Dirtz suggest that 1 x centre lighting pole will be required to minimise shadows on the 1st, 2nd and 3rd straights.

5. Second corner track, return path and spectator lighting
6. Third corner track and spectator lighting
7. Finish straight track and spectator lighting