1.0 Evaluation Results for All the Way Down

Having completed the user testing plan we proceeded to carry out our user testing with members of our target market. As detailed in our planning doc this focused around both gamers and mountain-biking enthusiasts, as these were the people who mattered most to the development of our game.

We initially spent a lot of time looking into how we would carry out the user testing so we had a relatively straightforward job to carry out our plan. The majority of the work involved reaching out to suitable participants and organising schedules with different people to complete interview sessions with them.

We has previously carried out some market research surveys within mountain biking communities, such as the /r/MTB sub-reddit, which has drummed up a lot of interest in our game. This gave us a lot of interested candidates who were both willing to participate and fit our target demographic.

To remain as consistent as possible a build of our Alpha game was created after our submission to be used for testing. All of the user testing was performed with this same build so that any resulting data could be treated as uniformly as possible. This is especially important for things like how long it takes a user to finish the level, as during development the track was constantly being changed and improved.

The main goals of this user testing were to identify any defects in the game which we had yet to identify, as well as figure out the areas which warrant more attention based on what the users feel they want the most from the game. This could be new features completely or simply highlight existing areas that need more work. This is important as with limited resources we need to pick and choose the areas we want to focus on moving forward, and only take on challenges which will give us back the most value.

Detailed here are some of the results and insights that we have made through our user testing and analytics tools for our game *All the Way Down*.

2.0 Analytics

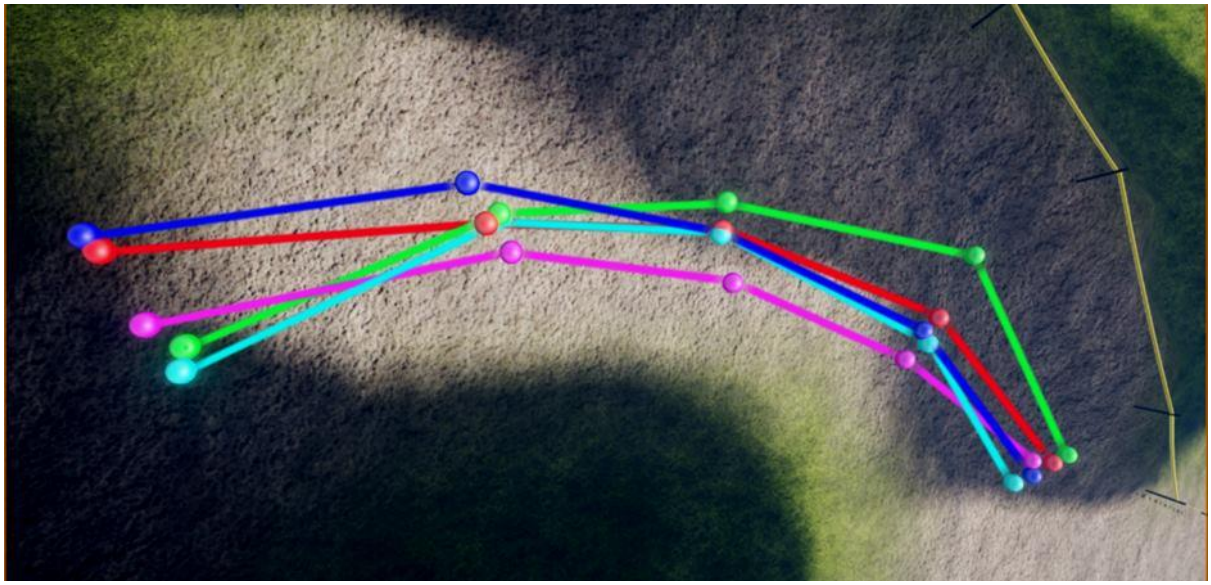
On top of performing our user testing sessions we also incorporated some analytics tools in our game so that we can monitor player activity while in the game and communicate that back to the team. This is a great alternative to manual user testing in the future as it is saleable with a growing user base which becomes more useful the more players you have. This is valuable as it provides an ongoing and hands off approach to gathering data about the quality of different game elements. We implemented a proof of concept version of this and gathered some sample data to see how it works. Two users played the game with analytics enabled to give us some sample data to work with at this stage in the project. As this is a small sample size the results are not very meaningful but it gives us some insight into the possibilities of deploying this at scale across all users playing the game. The possibilities for analysing player behaviour and performance are endless, but some of the different areas we covered were:

2.1 Player Crashing

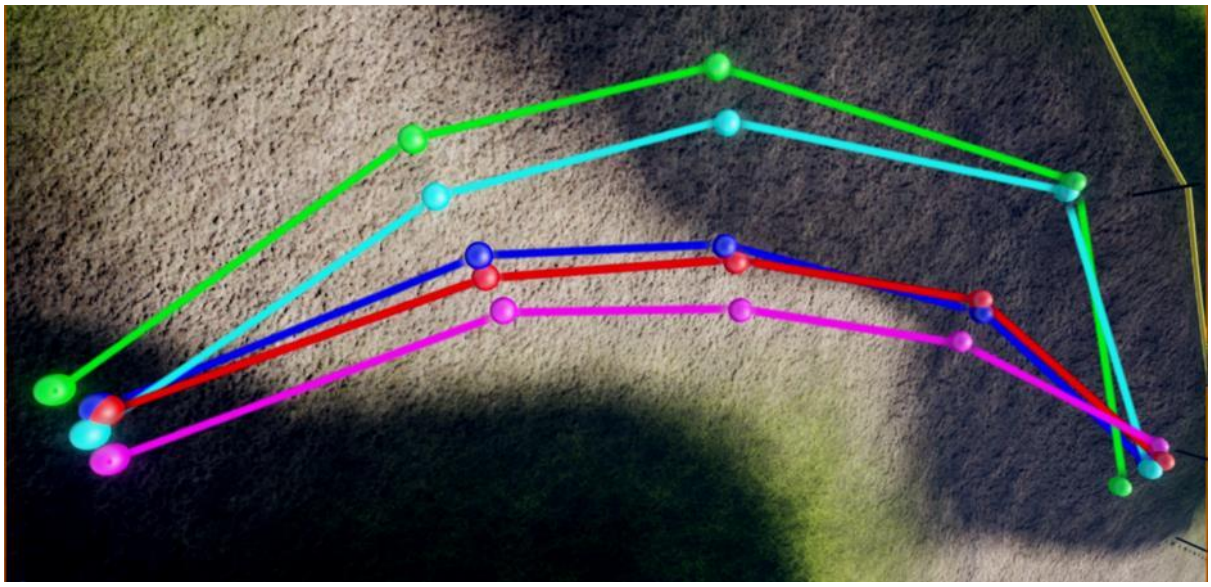
When users are playing the game they are able to crash off the bike when they hit any obstacles. When this happens we store the position that they crashed in. As shown on the right, this means we can plot the locations that players are crashing throughout a level. We can also compare how different players handle the same track which can be seen with the red and yellow dots showing the different player crash points. This can be helpful for track design as we can see where people have the most difficulty passing an obstacle as well as see what points are not proving enough of a challenge.

2.2 Player Cornering

A single corner was mapped out in the level and set up with trigger points to show how a player is approaching it. This is interesting to show what sort of angles people are coming in and out of the corner at and how consistent a player is in their lines. These lines can also be compared to split times as well as track times to identify which lines work the best to improve the player's time. A lot of effort can be put into designing a corner or section of the track and this can be used to see how a player makes use of that design. If a player ignores a feature such as a berm to go faster it could be excluded in future development.

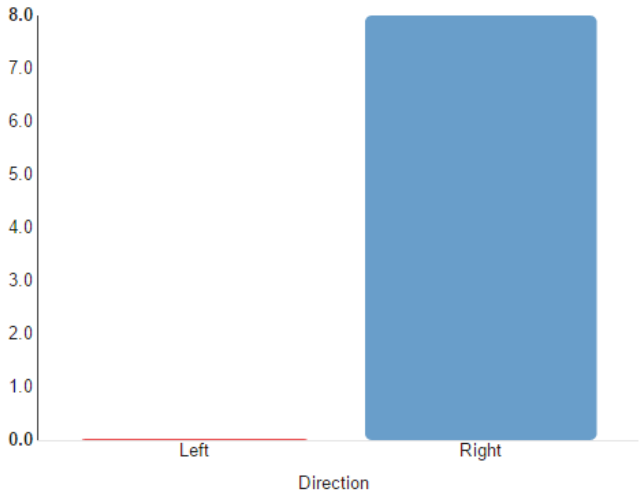


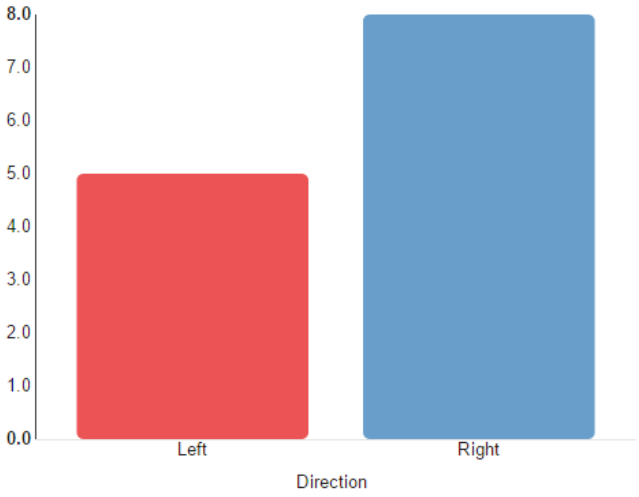
User 1 Approach



User 2 Approach

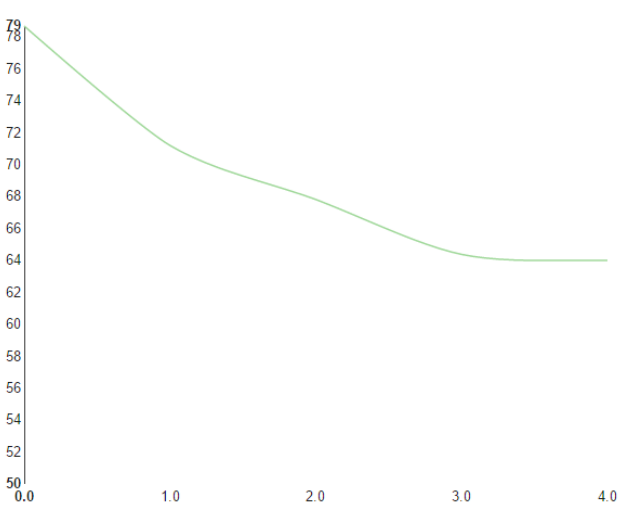
2.3 Rock Garden Path

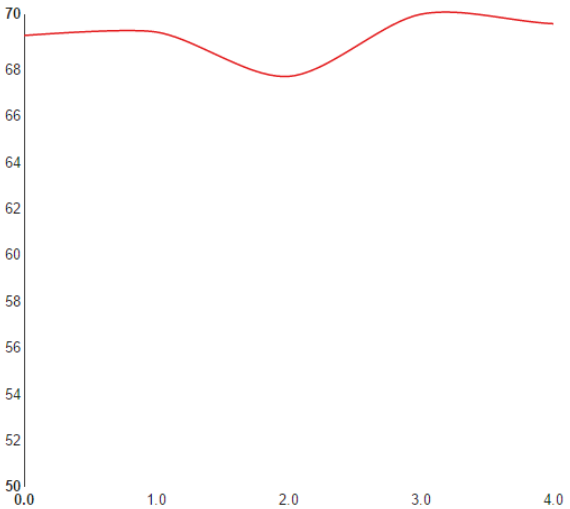




Another piece of the track which was of interest were the rock gardens. The rock gardens are a key challenge to the track and in the case of the second section of our track provides too distinct paths through it. These could be loosely categorised as being safe but slow (on the right), as well as dangerous but fast (on the left). It's interesting to see how different players treat this obstacle and their approach to taking risks in order to improve their overall time. The charts above show how two different players decided to go through the given rock garden. It's interesting to see how in some cases once a player learns a path and is confident they can get through it they are not motivated to try learn new approaches. This is in stark contrast to the second player that seemed to be more willing to mix things up. If a certain route was under represented by players choices this could be used to identify sections of the track that could be made more appealing as an option to the player.

2.4 Track Completion Times



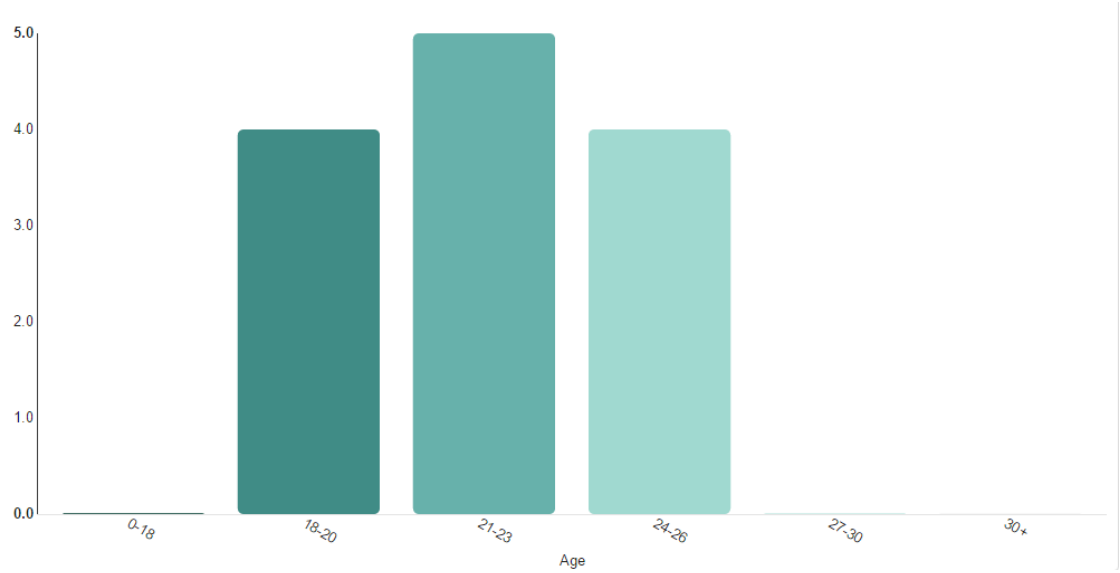


Probably the most straightforward measurement that we were interested in was in how fast people complete the entire track. We already cover this to a degree by providing a leader board to the player to share their times. This works more as a competitive tool for players to enjoy the game, but as it only looks at your singular best time to date we are missing a lot of context. We wanted to be able to see what a players score looks like over time as they play more and presumably improve their skills over time. In the above example on the left, we are able to see a great example of someone who first completed the track with a mediocre time and then steadily improved their scores as time went on. Large sets of this data could be compared with other players to see at what rate a new player is able to learn a track as well as analyse the track itself and its ability to provide a smooth challenge to the player.

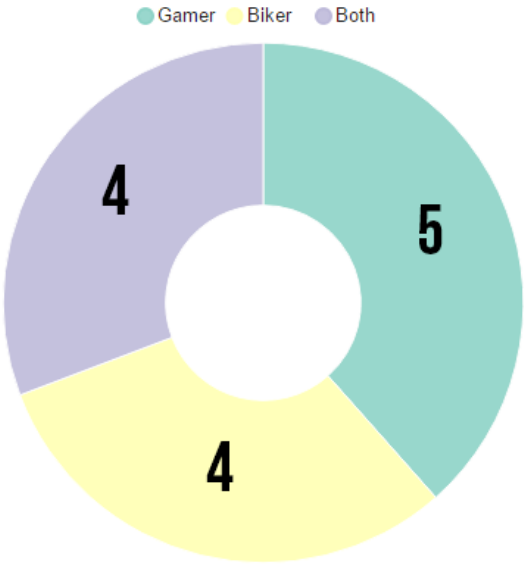
3.0 Results

The main outcome from our user testing were the records of our sessions which included some initial questions qualifying the candidate, some quantitative data around their performance, and then some open ended feedback focusing on different areas of the game.

3.1 Participants



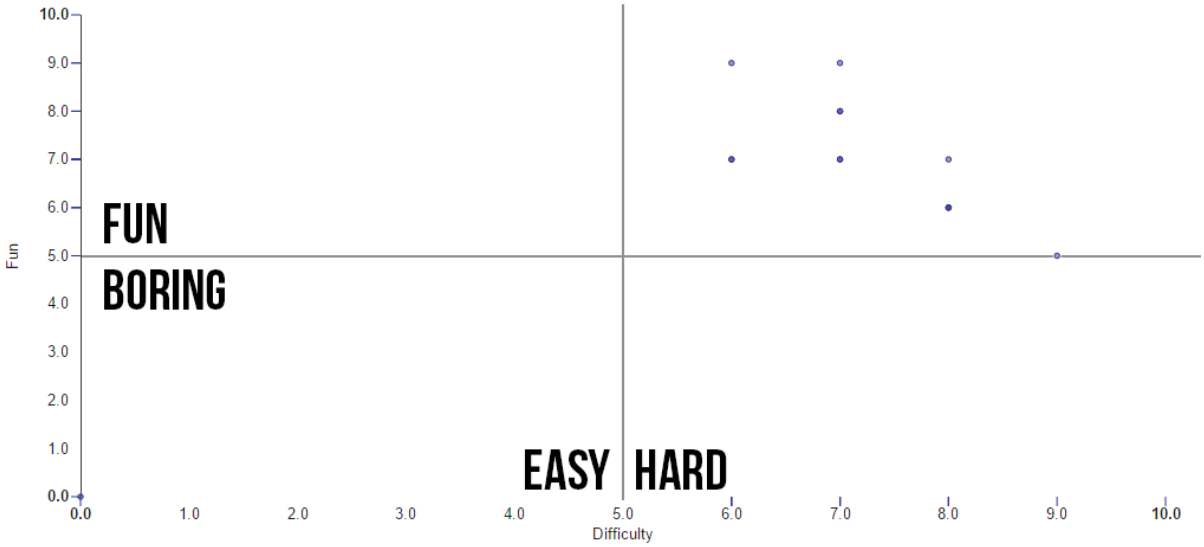
We conducted user testing sessions with 13 different people. This included both men and women and also had people spread throughout Europe and the US. The age groups we covered ranged from 18 to 26 although this was less targeted and more so just the demographic which we were in contact with the most. We had three different distinct groups we wanted to identify which were Gamers, Bikers, and people who were a mixture of both. We ended up with 5 Gamers, 4 Bikers, and 4 Mixed. I think our sample was a decent size as we got to the point where most issues started to become duplicated in one form or another, so we were confident that we had comprehensive coverage.



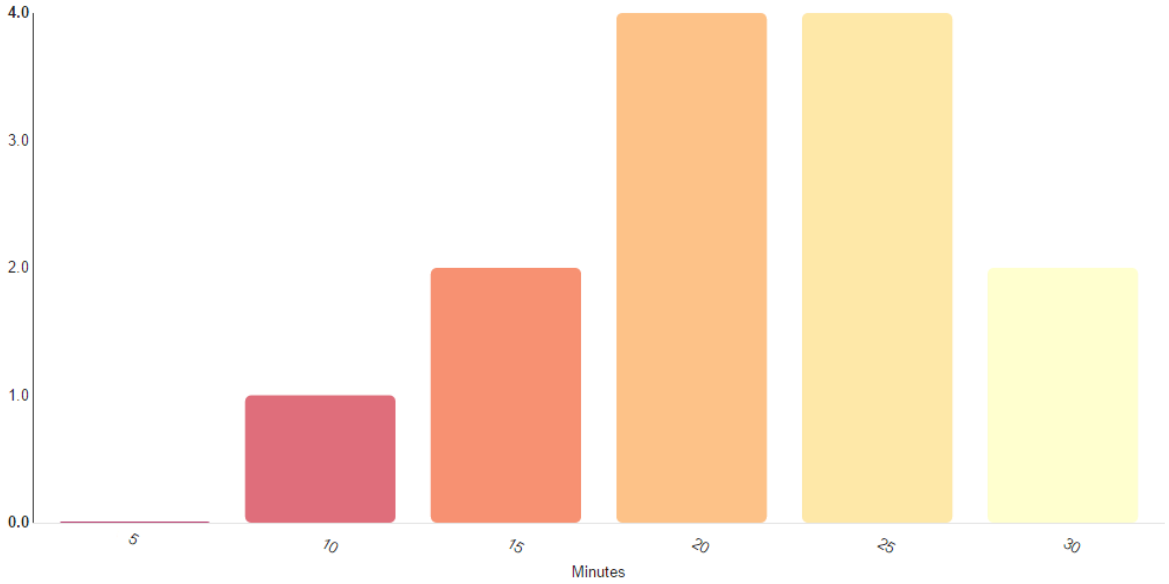
3.2 Quantitative Results

The start of our user testing involved a few questions and tasks that we categorised as quantitative, as we would be able to clearly compare results across all of our participants and find any evident trends. This is great compared to open ended feedback as the answers are less open to interpretation.

One of the key forms of feedback was where we asked the user to grade their experience in terms of how much fun they were having while playing the game along with how difficult they found the game. This was a much anticipated result because as a team we worried about how difficult the game would be to new players. There is a fine line between a game being hard and frustrating and a game being hard and challenging and we wanted to know where we fell on this scale. The plot below shows our feedback in this regard which is entirely scoped inside the both 'Fun' and 'Hard' ends of the scale. We discovered that while many players did indeed find the game difficult, that they didn't mind the challenge as much when the obstacles were both fair and consistent while they were enjoying the gameplay.



Another area in which we were able to look at the players performance was through the time it took each player to complete the track for the first time. This was able to give a loose indication of the rate at which players could pick up the game and begin to learn how to play and beat a level. If this number was too high we would risk the player becoming frustrated at playing the game for long periods of time without any kinds of rewards. Most players ended up completing the track in the 20-25 minute range which has been a focus of discussions about the difficulty of the track. Below is shown the distribution of times it has taken different players to complete the track.



Time to Complete Track

3.3 Qualitative Result – Issues Raised

The majority of the feedback that we received focused on open ended discussions of different elements of the game such as Sound Effects, Gameplay, and Track Aesthetic etc. This took place while the player was still playing the game and gave them a chance to voice their mind and opinions on each of the topics. This meant producing a lot of raw data to process once the testing was complete but in the end gave us some very insightful and diverse feedback. We heard about things people didn't like, new features that they would like to see, what they are excited about, and what they think works well. We were able to see what groups cared about what issues as well as the issues that received the most focus across all users.

Below is a list of tangible issues we have extracted from this process as well as how we would go about tackling these issues. They are grouped by relevant component and are only made up of the top issues from each section. Moving forward this would be the basis for priorities into areas of development as we can work out which areas contain the most value.

Controls

Issue *Controls A*	
Description of Issue Initial confusion with controls.	Severity Intermediate
Details of Issue Some users complained about not knowing the controls right away. The controls themselves were fine once they figured them out but there were no ways of them finding the controls without trial and error.	Visual None
Details of Solution Add a button mapping visual to the options menu or make it be the loading screen. A small tool tip like prompt at the bottom of the screen as the counter times down before the run starts could also work. A tutorial with a very simple level is another solution, though this may be overkill on teaching the user controls. The definite and best solution for this is the button mapping visual being an option in the menus. This would not take any more than 1 or 2 hours in the hands of our Menu/UI specialist.	
Future Avoidance It's a simple issue that simply taken for granted. Having tested the game heavily throughout development, we forgot to include a simple button mapping visual or in game prompt/suggestion. It could have been avoided by simply taking a step back and considering the things we are taking for granted in the game, and this applies to similar issues that we can avoid in the future.	

Issue *Controls B*	
Description of Issue Lack of face button controls.	Severity Minor
Details of Issue Some of the users either initially thought the controls would be on the face buttons or asked for them to be.	Visual None
Details of Solution Double up the controls of the game to also function through the use of the face buttons. This will not take more than a few minutes to do.	
Future Avoidance This and similar issues can be avoided in the future by ensuring the user always has more than one way of doing something/inputting actions to the game.	

Issue *Controls C*	
Description of Issue Restarting repeatedly is slower than it has to be.	Severity Minor
Details of Issue One user complained about having to pause and then hit restart when they have to do it so often. They suggested to add this action to a button on its own.	Visual None
Details of Solution Map this action to a button on the controller. This task will take 30 minutes at most.	
Future Avoidance This kind of issue could be avoided in the future by asking the question "Is there a faster way to allow the user to perform this action?"	

Issue *Controls D*	
Description of Issue Improve gameplay with trigger tapping.	Severity Enhancement
Details of Issue One user suggested that it would improve the gameplay by having to tap the trigger to simulate pedalling.	Visual None
Details of Solution Change how the forces are applied to the bike. Instead of constantly adding up based on the button being held, have them only apply for a brief moment when the button is pressed, forcing the user to press the button repeatedly to make the bike move. This would take 1-2 hours for our bike expert to implement, and possibly longer to get to a point where it feels good. However, this is a feature we considered early in development and ultimately decided against, so it would have to be trialled with more users to see if it is a feature many would want before deciding for sure.	
Future Avoidance This is less of an issue and more of a design decision, so it could be avoided in the future by involving users more at the initial development stage.	

Handling

Issue *Handling A*	
Description of Issue Controls are sensitive.	Severity Minor
Details of Issue One user suggested the controls are sensitive and would be difficult to handle on keyboard.	Visual None
Details of Solution Add a control sensitivity slider to the menu that affects how much the bike turns based on the input. This way, they can adjust the game to play exactly how they want/need it to. Adding the functionality to the game itself, along with setting up the option in the menu and getting this to load into the game in total would take around 3-4 hours, with a possible extra hour for balancing and finding a good range that works well.	
Future Avoidance People tend to have different sensitivities in terms of controls in games, so it was not an easy issue to avoid, nor is it a common complaint. In the future it could be avoided by building the functionality for adjusting various facets of the game from the get go to allow for different players to change these sorts of things to suit themselves.	

Issue *Handling B*	
Description of Issue Acceleration doesn't feel right.	Severity Intermediate
Details of Issue "Acceleration seems a bit off, the ramp up time for the bike could feel better." The feedback here is that the bike doesn't behave the way a bike perhaps should in terms of how it accelerates.	Visual None
Details of Solution The bike firstly accelerates linearly, more akin to an engined vehicle than a human powered one. Changing this ramp up process could be difficult, as the entire bike behaviour is custom made. A high level solution to this is to make the bikes' acceleration curve not linear but more like how a real bike accelerates, but the details of this would have to be figured out. The time for this task to be completed is difficult to predict, but an initial prediction would be at least 8 hours.	
Future Avoidance Avoiding this issue is difficult before the user testing stage, as it is the expert users that are needed to say whether the work we have done is really as realistic as we hoped it is. Having one good expert user involved at all stages of development would be ideal, but this is not an easy thing to do.	

Issue *Handling C*	
Description of Issue Lack of turning feedback.	Severity Severe
Details of Issue The bike wouldn't look like it is turning if it was in a vacuum. The arms and handle bars remain static while manoeuvring the bike.	Visual None
Details of Solution The arms, handlebars and front wheel of the bike have to be animated. This then has to be implemented into the gameplay to play at the right times and not look strange. This is all a multitude of tasks in itself and is not really accurately estimateable. Our modeller/animator having health issues only adds to the complexity of this estimation, as either he will take longer than usual to get this work done, or it will need to be outsourced/learned by another team member, meaning it takes longer this way as well.	
Future Avoidance Having more team members working on or capable of working on the modelling/animation side of the games' development would have helped avoid this issue, and in the future large issues like this could be avoided by ensuring all tasks could be carried out by at least 2 people. This is easier said than done however.	

Sound

Issue *Sound A*	
Description of Issue Starter buzzer is annoying when restarting a lot.	Severity Minor
Details of Issue Especially for new players when they might be crashing a lot and restarting the map, they have to listen to the starting horn over and over again which is quite striking.	Visual None
Details of Solution Could scale back the volume. Could implement a mechanic where if you restart very quickly it reduces the amount of time you need to wait to start again, and so cuts the sound short.	
Future Avoidance Can test the important sounds with users as soon as possible to get a wider array of opinions early in development. Also useful for music as developers will for inherent preferences	

Issue *Sound B*	
Description of Issue Couldn't turn down the buzzer in the options.	Severity Intermediate
Details of Issue When trying to turn down the buzzer sound in the options menu, it is not attached to either the music slider of the effects slider and so you can't turn it down at all.	Visual None
Details of Solution Correct the class structure for the starting sound cue so that it is grouped with the rest of the sound effects.	
Future Avoidance Make sure that all new sounds are assigned to a class when they are created.	

Issue *Sound C*	
Description of Issue Some sounds stay too long after you pass them.	Severity Minor
Details of Issue When you pass some things on the track like crowds along the side the shouting seems to stay for longer than it should, given how fast and far you go past them.	Visual None
Details of Solution Adjust the attenuation and falloff distances of some of the sound cues attached to the crowd.	
Future Avoidance Test the sound attenuation settings in an isolated environment first to identify how it sounds when moving past at speed.	

Issue *Sound D*	
Description of Issue Brake sound is repetitive.	Severity Intermediate
Details of Issue The exact same brake sound is used every time you brake so is noticeable after a while.	Visual None
Details of Solution Add some alternate braking sounds as well as add modulation so when a sound is played it is slightly different every time.	
Future Avoidance When sourcing sounds identify which ones will need to avoid repetition and factor that in. Especially important when recording sounds manually as recreating a setup will be hard.	

HUD/UI

Issue *HUD A*	
Description of Issue Adding a speedo to the bike.	Severity Enhancement
Details of Issue Add a HUD element when in game which can show you your speed on the bike.	Visual None
Details of Solution Data is there on the bike so not difficult from that point of view. Add a UI element which displays the current speed in it.	
Future Avoidance Edge case feature. More brainstorming could have identified this feature for evaluation earlier in the process.	

Issue *HUD B*	
Description of Issue Using controller with the HUD/Menu.	Severity Severe
Details of Issue Can use the controller for some elements of the game, but not for the menus. Is annoying to have to switch between a controller and mouse all the time when playing.	Visual None
Details of Solution Quite a large problem to solve. Need to set up a tracking system for all menus in the game to handle the input from the controller and highlight / select different menu options.	
Future Avoidance Keep in mind all of the input devices when designing menus. Won't lower the work needed by much but may avoid some bad designs which are not suitable for controllers etc.	

Track Aesthetic

Issue *Aesthetic A*	
Description of Issue Some low quality rocks at the end of the level.	Severity Minor
Details of Issue There are two large rocks which don't look the same as the rest and appear to be bad quality.	Visual 
Details of Solution Check on the rocks at the end and update to use the proper dynamic rock material etc.	
Future Avoidance Can remove old rocks from the project to make sure they don't get added instead of the latest one.	

Issue *Aesthetic B*	
Description of Issue Can see through sparse trees.	Severity Intermediate
Details of Issue Tree-line is not very dense and you can see through them to the sky behind.	Visual 
Details of Solution Cannot simply add more trees due to performance so need a system of masking the space behind the trees.	
Future Avoidance Can demo how the landscape will look early in the project so the problem is only the table earlier in the project. Might still be left out but is good in case it will take a longer time frame to solve.	

Issue *Aesthetic C*

Description of Issue	Severity
Floor of track is quite flat and 'clean'.	Minor
Details of Issue The floor is relatively flat and has a consistent texture, which doesn't quite make it over the uncanny valley.	**Visual** 

Details of Solution
Would involve spending a lot more time using the landscape tool to craft the track to a much lower level. Could use more foliage etc, but also impacts performance.

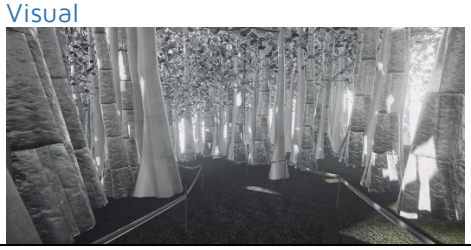
Future Avoidance
Use of more reference materials for sections of the track and early user testing to see to what degree the map needs to be replicated for users.

Issue *Aesthetic D*

Description of Issue	Severity
Want more activity at the end of race.	Enhancement
Details of Issue Want to see how things like other racers and other bikes at the end of the track with some community of racers together having finished.	**Visual** 

Details of Solution
Can use one of the tents at the end as a competition tent and add in some more riders with their bikes etc. communing at the bottom of the track.

Future Avoidance
Weighing up the importance of different track elements early in the project. Could spend more time filling out the end of the track instead of on track features if the priorities make sense.

Issue *Aesthetic E*	
Description of Issue Want trees closer to track.	Severity Minor
Details of Issue Trees could be a lot tighter to the track to mirror a lot of real tracks where you don't have much space to move around.	Visual 
Details of Solution Can make the track and guide ropes a lot narrower and add more trees along the edges of the current track.	
Future Avoidance More use of reference materials to reproduce the look and feel of typical tracks better.	

General Non-Categorised Issues

Issue *General A*	
Description of Issue Count the number of attempts to complete the track.	Severity Enhancement
Details of Issue As the amount of restarts you do while playing are quite high, it could be good to let the player keep track of their attempts. Might be contrary, if the goal is to get a best time rather than just complete the track (even if that's what the player feels like).	Visual None
Details of Solution Every time the player restarts the level you would add to a counter and show this counter on the HUD.	
Future Avoidance More user involvement at the idea generation stage so more features like this are thought of earlier in development.	

Issue *General B*	
Description of Issue Crashing too easy.	Severity Minor
Details of Issue The force needed for the player to crash on the bike feels too low as doing some small things like hitting certain rocks make you crash.	Visual None
Details of Solution Can make the force needed to crash higher in the bike blueprint.	
Future Avoidance Test some of the initial settings on the bike early in the process to be able to balance them with other game elements.	

Issue *General C*

Description of Issue	Severity
Improve the close up crowd models.	Enhancement
Details of Issue The only models that you can really see clearly are the ones at the starting zone, and these particular ones are some of the worst models among the crowd.	**Visual** 

Details of Solution
Swap out the up close models for one of the better characters in the pool of members in the crowd.

Future Avoidance
Try to keep the quality of all of the models in the game relatively even so that lower quality stuff doesn't stick out alongside everything else in the game.

Issue *General D*

Description of Issue	Severity
Hard to see the guide ropes.	Intermediate
Details of Issue The guide ropes are the default unreal grey, and as they come into view are very difficult to see.	**Visual** 

Details of Solution
Change the color of the ropes to be something more visible such as bright yellow or similar.

Future Avoidance
When putting new meshes into the track make sure to set them up with a base texture and material and not leave them with the default settings.

Issue *General E*

Description of Issue	Severity
Some track elements are very hard.	Intermediate
Details of Issue	**Visual**
Some features like the rock gardens and the jump are quite difficult for new players.	None

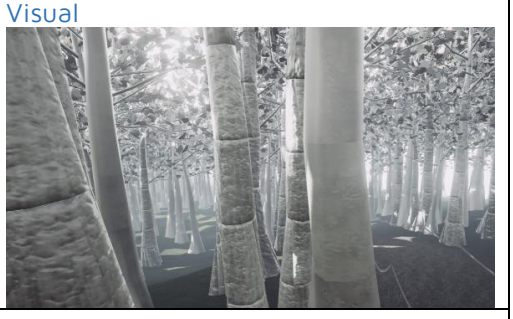
Details of Solution

Look through the obstacles and adjust the positioning of some rocks etc. to make the players progression a bit easier.

Future Avoidance

Frequent playtesting with new players to get a sense of how difficult the track design is at each stage of development.

Issue *General F*

Description of Issue	Severity
Tree LOD changes look bad.	Severe
Details of Issue	**Visual**
When the LOD changes on the trees from low quality to high quality the transition looks terrible.	

Details of Solution

Fix the textures used in both LODs so that the switch from high to low is smooth.

Future Avoidance

Testing of textures inside the engine editor as well as in game before they are committed to the master branch of the game.

Issue *General G*	
Description of Issue Able to get stuck on the guide rope poles.	Severity Minor
Details of Issue Sometimes you can land on the poles of the guide ropes and be unable to move, even though you haven't crashed	Visual None
Details of Solution Could make the poles on the guide ropes non-collidable or change the mesh to something more difficult to get stuck on.	
Future Avoidance Keep in mind the gameplay ramifications when putting in visual elements to the track such as the guide ropes.	

Issue *General H*	
Description of Issue Reverse too weak.	Severity Intermediate
Details of Issue If you are on a particularly steep piece of track, the power applied when moving backwards isn't enough to move the bike. A big problem when on this type of incline and also stuck up against a tree or similar.	Visual None
Details of Solution Increase the force applied when reversing in the bike blueprint to be enough to climb the steeper parts of the track.	
Future Avoidance Thorough playtesting of the bike in all parts of the track before finishing a feature such as the movement settings.	

Issue *General I*	
Description of Issue Move name input in options to top of menu.	Severity Minor
Details of Issue The option to change your name is at the bottom of the list of settings. On the smaller resolutions it is not shown to begin with and need to scroll down to see it. Causes a decent amount of players to miss it unless told about it.	Visual 
Details of Solution Simply reorder the elements in the UMG list to have the name input at the top instead of the bottom.	
Future Avoidance It's a very minor issue. Again, more user testing earlier tends to take care of small issues like this.	

Issue *General J*	
Description of Issue Add new mechanic like stamina or balance.	Severity Enhancement
Details of Issue The pressing a trigger / button to move forward is fairly one dimensional so it is suggested to add additional challenges to the basic movement.	Visual None
Details of Solution Would involve prototyping a whole new game mechanic to find something like a stamina system that is both fun and doesn't take over the game.	
Future Avoidance This is something we considered at the start of development but because the basic track was difficult enough, we felt that additional complexity in the controls of the bike is something not worth pursuing. To avoid things like this in the future we should better document all ideas for the game so they don't get lost.	

Issue *General K*

Description of Issue	Severity
No berms.	Enhancement
Details of Issue The track doesn't have any large berms for the player to ride up against.	**Visual** 

Details of Solution

Spend more time on the corner design throughout the track to incorporate berms in the suitable corners.

Future Avoidance

The berms proved difficult to develop and replicate throughout the track. Avoiding these difficult problems in the future is difficult, but a general stance to take is to not write something off just because it is very slow or difficult to achieve, within reason.