Changes to the requirements were made once initially when the project was inherited and then as changes were requested we reviewed the requirements to see how they would be met if the change was made. In the cases where the requested change did not impact which requirements were met then the change management process would continue as stated in the change report document. However if the change meant some requirements were no longer met then as a team and also with stakeholders we would discuss whether the requirements were still relevant to the game we were making or whether the requirements were a realistic, accomplishable set of goals given our current resources.

Any changes from Assessment 3 to 4 will be in red. Any requirements removed will be striked-through and will be in red.

- G8 and G9 were changed since resources could not be fully implemented in the game since nothing was implemented by the previous group. As per the requirements some way to use or spend your resources was required and a new type of objective would be required which would be dependant on your resources in some way. This also meant a shop like gameplay element would need to be added which would require a lot of G.U.I. elements to add a varied selection of resources and rewards as well as the shop G.U.I. itself.
- G10 has been completely changed now some variation in weapon handling (fire rate, damage) will come from powerups
- G14 has been added as per the requirements change of assessment 4 requiring a demented mode for both the player and some enemies
- G15 has been added as per the requirements change of assessment 4 requiring at least two different types of cheat must be added to the game which can not significantly alter the difficulty of the game.
- S5 has been removed since we will not be swapping the game with other teams after this assessment is over however the principles of keeping clean and maintainable code will persist as this will allows us to keep development at a productive rate all the way until development will finish. This will also stop bug fixing from getting harder in this last assessment.

ID	Requirement	Justification	Test Criteria
Gameplay Systems			
G1	The game is split into at least distinct 8 **'rounds'** (levels) where an objective is obtained at the beginning of each. Rounds progress in a linear fashion one after the other, *however once a level has been completed it can be replayed at any time*. The player-controlled duck character acts within rounds.	**Scenario:** *"At the start of each round of the game, the player needs to acquire an objective"* **Interview:** *[Either continuous or discrete, would depend on narrative context]* & *[Okayed this approach]* It was decided to use 8 rounds since tying objectives rounds allowed for an easy to understand game structure. Using a linear progression was chosen since it was felt to allow the game a better sense of direction and progress than random rounds. It also allowed the easy ramping up of difficulty as rounds progress and allows for a more structured than disjointed narrative.	**-There are 8+ rounds.** **-Rounds follow each other in a consistent order one after the other.**

G2	The game will include at least eight different **'objectives'** (goals), of which there are at least two distinct types. Objectives can be either be failed or succeeded by the player.	**Scenario:** *"Ducks have objectives..." & "...must support at least eight different objectives". & "support at least two different types of objectives" & "Failing to achieve objectives"* Objectives provide an easy way to both motivate and direct the play, allowing the rest of the game to be based around them. The success or lack thereof provides the driving force for the player actions.	**-There are 8+ objectives.** **-There are 2+ types of objective** **-Each objectives has a fail and success state..**
G3	Objectives can reasonably be achieved in an approximately 5 minute period. This is not describing an attempt to rush through a level, but normal gameplay.	**Scenario:** *"...using your game for its own promotional activities, e.g., at Open Days, UCAS Days."* **Interview:** *[Okayed this approach.]* This allows achievements to be made in a short time. This assumes that in these situations there will be a short play time, and that **S4** remains. If this audience is to change then making objectives harder to complete would extend a round. Another factor is that this does not impact other audiences as much as it may seem, since longer play times can be achieved by playing several rounds.	**-Each objective is achievable in 5 minutes.**
G4	There is a **'point'** (score) tracking system. Points are given when an objective is completed and may be affected by other factors, such as time. Points are cumulative *at the end state of the game*.	**Scenario:** *"When an objective is completed, the duck is awarded points."* Points provide a simple incentive for re-playability and progress tracking. It also allows indirect competition between different players.	**-Points are given when an objective is completed.**
G5	There is a **'health'** system, represented to the player in hearts. Players lose health from some obstacles, and gain it by picking up resources.	Provides a challenge to the player as they progress and encounter danger. Inst-kills can feel cheap and annoying, a health system providing a more interesting combat / damage system. Assumes that the combat aspect of the game is not changed by any new requirements. Could be easily mitigated by removing such a system (since removing a system is easier than adding one).	**-Some obstacles damage health.** **-Pickups increases health.** **-Some resources increase health.**
G6	The game will feature eight different **'locations'** from around the University of York.	**Scenario:** *"...must take place at the University of York"* & *"...must include at least eight locations..."* Provides the backdrop for the game and the context.	**-There are 8+ locations from the UoY.**
G7	There will be present at least five different types of **'obstacle'** for the player to overcome. Obstacles will be objects in a location that impede player progress. At least one obstacle will be generated at random and at least one is tied to an objective. Obstacles physically collide with the player, preventing navigation past them.	**Scenario:** *"The game must support at least five different types of obstacles..."* & *"obstacles in the game to make it challenging"* & *"...at least one randomly allocated obstacle..."* & *"...at least one objective-specific obstacle..."* Provides the main mean of challenge in the game, directly countering player objective progress. (See **S2**, **S4**, and **S5**) Collision means the player cannot skip obstacles or move past them (which would negate their function).	**-There are 5+ type of obstacle.** **-There is 1+ random obstacle.** **-There is 1+ objective specific obstacle.** **-Obstacles collide with the player.**

G8	A portion of the obstacles will be '**enemies**', which are aggressive, and actively impede progress. Enemies are capable of decreasing player health and are defeatable. ~~They occasionally drop resources.~~	**Scenario:** *"e.g., a Guard Swan …"* **Interview:** *[Okayed enemies]* Enemies provide a direct threat to the player. Just passive obstacles would result in a slow pace of game. Enemy use assumes the fast combat remains relevant. Since enemies would be heavy developmentally (movement, combat, health, graphics) a specific feature approval was sought and received.	-Some enemies decrease health. -Enemies are defeatable. -Enemies drop resources.
G9	~~The player should be able to obtain '**resources**'. Resources aid the objective progress of players, through upgrades or directly to achieve the objective. Some are maintained across rounds.~~	~~**Scenario:** *"The ability for the duck to acquire … resources"* **&** *"The objectives should be achievable … by acquiring resources…"*~~ ~~As well as further expanding gameplay it provides a longer term planning aspect, since players can decide on resource use cross-round.~~	~~-(Relevant) resources are maintained between rounds.~~
G10	~~The player will be able to acquire '**weapons**' in the game, which allow the player to damage enemies. Weapons beyond the default should be dropped by enemies and done so in a set order.~~	~~Gives the player a method to deal with enemies, providing the main player interaction besides movement. due to **I1** including weapons does not conflict with the requirements of **S4**. Linear progression of weapons allows a smooth ramp up of player ability as the game progresses, and provides an incentive to not avoid enemies.~~	~~-The player can obtain weapons.~~ ~~-Weapons damage enemies.~~
G11	The player should be able to obtain at least three distinct '**powers**' (abilities). Powers provide the player character with new abilities, which aid their progress. Powers are obtainable from pick-ups which are dropped by enemies when they are defeated. Powerups should be able to be stacked and work simultaneously.	**Scenario:** *"The ability for the duck to acquire special powers..."* **&** *"The objectives should be achievable … by acquiring special powers…"* **&** *"...at least three different Duck Special Powers"* **&** *"… can be acquired as a round of the game progresses."* Provides a way to change up gameplay and keep it interesting.	-There are 3+ powers. -Pickups exist for powers. -Powerups are stackable.
G12	A fail state is reached when an objective has been failed or if the player runs out of health.	**Scenario:** *"...a game ends"* *Resets level that the player has failed. So player has to restart the level. Else there would be no challenge to the game.*	-Game fails when an objective fails. -Game fails when player dies.
G13	The game has a win state obtainable when the final round has been completed.	**Scenario:** *"...a game ends"* Since the round ordering is linear rather than random it is natural to have the win state be at the end of the round.	-Game wins when final round is finished.
G14	Both the player and some non-player characters will act randomly when in demented duck mode. A player will become demented when they fail to fight off the dementia virus. When demented, movement will become random. When an npc is demented they may behave differently to other similar looking enemies. A demented player can return to normal.	To stop the random elements of the demented duck mode fun we introduced a skill element to the requirement which has the player occupied with both a battle against enemies and the dementia disease they are infected with, this is to stop a conflict with requirement **S2**. The rest of the requirement is our interpretation of the requirements change for assessment 4.	-The player must be constantly battling the dementia virus. -Given identical inputs the player may end in different positions while demented. -NPCs which look indistinguishable from each other may have different attacks / movement.

G15	The player can input a cheat code through the use of some key combination. There must be at least two types of cheats. The cheats should not affect the difficulty of the game significantly	If a cheat in some way makes the game harder for the player such as obscuring vision, the cheat must also reward the player in some way for the risk. Other cheats must be passive and only alter aesthetics. This ensures difficulty stays roughly the same and the game is just as fun to play. This was added due to the change in requirements for assessment 4	-Cheat activates if and only if correct key combination is input by user in the pause menu
Interface / Visuals			
I1	The game will use a cartoony / arcady design style.	This style is simple to work with and create images for, as well as allowing combat and enemy mechanics without conflicting with **S4**.	-Consistent graphical style.
I2	The obtained points will be displayed at all times.	**Scenario:** *"The GUI must always show the points that the duck has acquired"*	-Points always on-screen.
I3	The game will use a flat looking background, but characters and obstacles will appear from a side perspective. The visuals will attempt to mimic an orthographic projection of 3d world.	This was decided to be the preferable choice since it allows graphics to be produced in a more systematic way, as well as allowing map design to be done in a more discrete manner.	-Consistent graphics implementation.
I4	There will be a minimap which will show the location of the duck character and its location in the round.	**Scenario:** *"The GUI must always show … the location of the duck"* **Interview:** *[Could show location within the wider world or just an idea of where you are in the round/land.]* It was decided to use a minimap since this fit with the perspective choice (by convention), and provided an easy way to display the map as a whole without providing too much information.	-Duck position displayed constantly.
I5	The current objective will be displayed at all times on screen.	This ensures that the player is aware of what the need to do and how to progress, keeping them informed.	-Objective always on-screen.
I6	The player should be able to pause the game at any point while playing the core part of the game (not on menus) with the ability to return to the main menu. Cheats can be entered while game paused.	Allowing the player to pause the game and return to the main menu means the player can change the level or adjust settings quickly without having to complete or lose the level. We will enter cheats in this screen so the player won't be damaged while a code is entered.	-Game can be paused while playing core game -Can return to main menu from pause -Can enter cheats while paused
Control / Movement			
C1	The game will allow the player to move the duck through the use of the keyboard.	**Scenario:** *"The ability for the duck to move throughout the...University."* The keyboard was selected since it is a standard input device most conventionally used for movement.	-WASD/Arrows move the duck up/right/down/left.
C2	There are three distinct movement modes; waddling (slow), swimming (moderate), and flying (fast).	**Scenario:** *"Ducks innately have the ability to waddle (fairly slowly), swim (fairly briskly), and fly (quickly)."*	-Waddle,swim, and fly modes exist.
C3	Waddling is the ground movement type allowing movement across solid ground.	Assumed to be standard movement type from the name and the fact default movement.	-Waddle is medium. -Waddle is default movement.

C4	Swimming is the water movement type, which automatically happens when moving onto water in a map.	Since swimming requires water and would eliminate the ability to walk, this movement type is merely used as an alternate default movement. This requirement means some maps must be designed for water, but this should not take too much development time.	-Swim is slow speed. -Swim is contextual.
C5	Flying will be a player activated movement mode, where the player can move quickly for a short period of time.	If constantly available there would be no reason to use any other movement. Allowing it to be activated instead of just contextual allows movement and gameplay to be more interesting and interactive for the player.	-Flying is faster. -Flying can be activated. -Flying has a cooldown period.

ID	Stakeholder	Sources
Stakeholders		
S1	The main customer (Richard Paige) is the core Stakeholder deciding on the development of the game. Their interest is in the marketability and selling potential of the game. Interested in the satisfaction of **S2**.	**Scenario:** *"... customer who is interested in eventually trying to market and sell your game."*
S2	The game should be attractive enough to potential customers to be sold. This encompasses many general requirements, being easy to understand, fun to play, and challenging. The potential customers are a general audience with no demographic in particular being targeted for sale.	**Scenario:** *"... customer who is interested in eventually trying to market and sell your game."* **Interview:** *[General audience target]*
S3	The York Communications Office, whilst not directly involved with the game, is interested in the promotional uses of the game, as such there are more interested in game polish, and demonstrability of technical knowledge the game can provide. Interested in the satisfaction of **S4**.	**Scenario:** "The University of York Communications Office, who is interested in using your game for its own promotional activities, e.g., at Open Days, UCAS Days."
S4	Visitors present at UCAS days and open days will or observe the game. Will include prospective students (~16 - 18) and accompanying adults as the key subsections. This audience will play for only short periods of time and not have a longer play session. They are primarily concerned with enjoyment and gameplay satisfaction. The game content should be suitable for such an audience.	**Scenario:** "The University of York Communications Office, who is interested in using your game for its own promotional activities, e.g., at Open Days, UCAS Days." **Interview:** *[Nothing unsuitable graphicly, cartoon violence is acceptable]*
S5	~~The SEPR Cohort / Fellow teams will both be experiencing the game, and considering it for code swapping. Other teams are looking for things which make the project easy to continue. As such, neat code, sensible code structuring , and an easy to follow architecture plan are all of interest.~~	**Scenario:** ~~*"a game that should be playable and enjoyable by your SEPR cohort"*~~