

Certification Report Football 1X2 Ltd Game Audit Report - Bulldozer
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Certification Laboratory



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Jurisdiction Gambling Commission
United Kingdom

Technical Standard used for testing Remote gambling and software technical standards
February 2021
Testing Strategy for Compliance with Testing strategy
for compliance with remote gambling and software
technical standards, February 2021

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Gaming Associates



1 Notations

1.1 Confidentiality

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1.2 Disclaimer

ga has reported on what was discovered throughout the assessment period of the client’s game related to the technical scope of testing as per applicable jurisdictional requirements. Results are based on the client’s submission of information material, access to the testing environment and applicable testing is performed within a finite period.

Inherently there are limitations in performing compliance testing within a laboratory environment and accordingly **ga** has undertaken its best endeavours to ensure a thorough assessment is performed and conclusion stated.



2 Administration

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2.2 Version

Version	Description	Date
V0.1	Initial draft – MARS	2022-12-07
V0.2	Reviewed and Updated - WKAS	2022-12-08
V0.3	QA – UVAS	2022-12-09
V1.0	Final Report to 1X2 Network Ltd	2022-12-12

3 Executive Summary

3.1 Introduction

Football 1X2 Ltd (1X2 Network Ltd) has requested Gaming Associates (**ga**) to test their game Bulldozer against the compliance requirements of the UK Gambling Commission (UKGC) Remote gambling and software technical standards, February 2021.

ga has tested the 1X2 Network Ltd game Bulldozer against the requirements listed in “Section 3: Remote gambling and software technical standards (RTS)”.

The testing has been performed according to UKGC Game testing requirements:

Game testing:

1. Verification of game design – Maths, artwork/rules as displayed to players, and theoretical return to player (RTP).
2. Software testing - This involves verifying the software implementation of the above game design, artwork, maths and RTP through testing of the game on an environment which reflects the intended live environment; verification of game rules, actual RTP using simulation, emulation and manual testing; any scaling and mapping used to convert raw random number generator (RNG) output to game outcomes.

This report presents the results of testing performed by **ga** for the Bulldozer game. Hashes of the critical components of the game are listed in Annex A : Hashes.

3.2 Scope of Testing

The scope of testing included the following UKGC requirements:

- ♣ Section 3: Remote gambling and software technical standards (RTS)
 - RTS 1 – Customer account information
 - RTS 2 – Displaying transactions
 - RTS 3 – Rules, game descriptions and the likelihood of winning
 - RTS 4 – Time-critical events
 - RTS 5 – Result determination
 - RTS 6 – Result determination for play-for-free games
 - RTS 7 – Generation of random outcomes
 - RTS 8 – Auto-play functionality
 - RTS 9 – Progressive jackpot systems
 - RTS 10 – Interrupted gambling
 - RTS 11 – Limiting collusion/cheating
 - RTS 12 – Financial limits
 - RTS 13 – Time requirements and reality checks
 - RTS 14 – Responsible product design

This compliance evaluation does not include evaluation of the RNG. The RNG being used has been certified separately as per UK RNG testing requirements. Verification of actual RTP has been performed using simulated game results data utilising the certified RNG.

3.3 Test Summary

1. Game name: Bulldozer
2. Channels (game clients):
HTML5: Supports Desktop and Mobile browsers
3. Game ID:



- RTP 94% = 8212
RTP 96% = 8112
4. Game version:
Game Version RTP 94%: V 1.8212.23.1
Game Version RTP 96%: V 1.8112.23.1
 5. Versions of games that the game supersedes: None
 6. Theoretical return to player (RTP):
RTP 1: 94.02%
RTP 2: 96.07%
 7. Actual RTP (calculated from simulated game results):
RTP 1: 94.00%
RTP 2: 96.02%
 8. Platform supplier: 1X2 Network Ltd
 9. Platform name and version: Panaroma Hub Version 2
 10. Jackpot: No

3.4 Conclusions and Recommendations

1X2 Network Ltd's game Bulldozer complies with the requirements of the UKGC Remote gambling and software technical standards, February 2021.

ga recommends the 1X2 Network Ltd game Bulldozer to be approved for use in the Football 1X2 Ltd production system.

4 Test Results

This section summarises the results of the tests performed on the 1X2 Network Ltd's game Bulldozer. The tables in the following sub-sections provide the compliance status of the game against the UKGC's requirements listed in [1]. Different values used in the "System Compliance" column are described as follows:

Compliant: The game complies with the requirement.

Does Not Comply: The game does not comply with the requirement.

Acknowledged: The requirement is only a statement or information.

N/A: The requirement is not applicable to the game.

Out of scope: The requirement cannot be evaluated at this stage due to the current scope of testing or limitation of the test environment.

4.1 Section 3: Remote gambling and software technical standards (RTS)

UKGC RTS Requirements	Compliance Status	Comment
RTS 1 – Customer account information		
RTS aim 1		
To provide customers with easily accessible information about their current balances and facilities that enable them to review previous gambling and account transactions.	Acknowledged	
RTS requirement 1A		
Where customers hold a credit or debit balance, the pages or screens used for gambling and to move money into and out of accounts must display the customer's current account balance, in the currency of their account (eg dollars, euros or pounds sterling), whenever that customer is logged in. Where it is not practical to display current balance from gambling screens then easily accessible links to this information must be provided.	Compliant	The current account balance is displayed on the gambling screens in the currency of the customer's account
RTS implementation guidance 1A		
a. Gambling pages and screens include virtual game pages, sports betting coupons, poker and other virtual gaming 'tables'.	Compliant	The customer's total account balance is displayed on the gambling screens.
b. For telephone betting this information is to be delivered at the customer's request by the customer service agent or automated response system	N/A	
RTS requirement 1B	Out of scope	Football 1X2 supplies games to operators. It has been verified that the gaming transactions are being recorded by the platform and can be displayed by the operator on their website. The requirements in this section are the operator's responsibility.
Customers must have easy access to at least three months account and gambling history without having to contact the licensee. A minimum of 12 months of gambling and account history must be made available on request. The ability to request this information should be made clear to customers and be provided as soon as is practicable.		
RTS implementation guidance 1B		



UKGC RTS Requirements	Compliance Status	Comment
a. The gambling and account history should include:		
i. credit and debit information such as deposits, withdrawals, movement of funds between products, payments off credit accounts, entry fee deductions, and bonus information, as appropriate		
ii. bets placed, the results of bets, winnings paid		
iii. For gaming (including bingo) full or summarised gaming information should be available, for example, £10 taken into game, £100 turned over, £3 taken away from game. Where detailed historic game information may not necessarily be directly available to customers, as a minimum, customers must have easy access to details of the last game played and summarised information for previous activities		
iv. where customers are able to move funds between gambling products, account information and statements should clearly display movement of funds into and out of products		
v. an option for customers to use their own defined time period or to select from a range of time periods. A summary total for the period selected should be displayed (at least on the first screen or page if the transactions span multiple screens).		
b. For telephone betting and restricted display devices, where customers demonstrate that they also have access to websites – by registering online or using other online products – it is acceptable to provide access to statements via these websites, otherwise customers should be sent a regular copy of their statement via email, fax or post unless they elect not to receive this information. Customers should be sent a statement on request, even if they have opted out of receiving regular statements.		
RTS requirement 1C	Out of scope	Football 1X2 supplies games to operators. The requirements in this section are the operator's responsibility.
Customers must be able to access information about their net deposits.		
RTS implementation guidance 1C		
Net deposits are defined as the running total of all deposits minus the sum of all withdrawals for the lifetime of the account. This should be displayed at an account level so the figure represents the net position of all payment methods. Where full account lifetime history isn't possible then, as a minimum, the net deposits should be displayed from 1 April 2018, or the account opening date if after 1 April 2018. Information which explains the net deposit figure, including the timeframe it covers, should be provided.		
RTS 2 – Displaying transactions In respect of requirements 2A – 2D - All gambling In respect of requirement 2E - Slots		
RTS aim 2		



UKGC RTS Requirements	Compliance Status	Comment
To enable the customer to understand the value and content of their transactions.	Acknowledged	
RTS requirement 2A		
The remote gambling system must make available clear information about the amount of money being gambled by the customer, including any conversions from one form of currency to another, or from currency to credits, chips or other tokens etc, at the point of conversion.	Compliant	
RTS implementation guidance 2A		
a. The financial commitment for each gamble should be displayed somewhere on the screen either in the currency of the customer's account or in the currency of the product. The use of credits, chips or other tokens with no face value should only be used when the corresponding currency amount is clearly visible, or where the customer is not staking additional money such as a poker tournament.	Compliant	The bet amount is displayed in the currency of the customer's account.
b. Any conversion from one currency to another should be clearly presented to the customer and any conversion rules are also to be presented. Where currency is converted into tokens, chips or credits, etc, the conversion should be clearly displayed.	Compliant	The bet amount is displayed in the currency of the customer's account.
c. Information about the value of the gamble should be displayed including, as appropriate:		
i. unit stake and total stake, whether currency, credit, tokens, chips, or any other form of payment	Compliant	The total stake amount is displayed in currency.
ii. entry fees, for example, payment for entry to poker tournaments	N/A	
iii. the price of lottery tickets and the number of draws entered.	N/A	
d. For telephone gambling, this information is to be delivered by the customer service agent or automated response system.	N/A	
e. For subscription lotteries, sending a confirmation by email or post and/or displaying the stake and the number of draws entered when the customer subscribes is sufficient.	N/A	
RTS requirement 2B		
The gambling system must display sufficient relevant information about the customer's gamble so that the content of the gamble is clear. This information must be made available before the customer commits to the gamble including, for example, in the artwork and textual information displayed during gaming, or on an electronic equivalent of a betting slip or lottery ticket.	Compliant	
RTS implementation guidance 2B		
a. The following items provide guidelines about the type of information that may be relevant:		
i. selections – the items the customer has chosen to gamble on;	Compliant	All selections made by the customer are clearly displayed on the bet screen.
ii. the bet type	Compliant	



UKGC RTS Requirements	Compliance Status	Comment
iii. the accepted odds, for example current odds, starting price, first show, etc	N/A	
iv. the odds format that will take precedence in settling bets must be set out in the rules.	N/A	
These items, where relevant, are also required on applications designed for use on restricted display devices.	Acknowledged	
b. For telephone gambling the content of the customer's bet should be read back to them before the bet is confirmed.	N/A	
c. Where the customer is able to choose, through the use of a third party user-interface, to override the display of this information, this must not be the default option. That is, the customer must make an active choice not to have the information available or to install a user-interface that does not contain the information. The remote gambling system should continue to make available or send the information to the customer; it should not assume that the information is not required.	N/A	
For subscription lotteries, sending a confirmation by email or post and/or displaying the first draw and the number of draws for which the customer will be entered is sufficient.	N/A	
RTS requirement 2C	N/A	No price fluctuations in the game.
The gambling system must enable customers to choose whether to accept price fluctuations (in either direction) that occur after their bet is requested.		
RTS implementation guidance 2C		
a. Players should be presented with options to control whether a price change should be accepted or not.		
b. These options must be presented on a per bet basis, except in circumstances where a customer has requested a default account setting to disable price change alerts prior to bet acceptance. Where the functionality is offered at an account level the default option should not be set to accept all fluctuations. Where a customer chooses not to accept price changes automatically any bet where the price changes must be reoffered before it is accepted.		
c. Information sufficient to explain the options to the customers should be provided.		
d. An optimum solution would enable consumers to choose to automatically accept price movements within a particular margin range. Account level options offered to consumer could include accepting all bets with higher price, accepting all bets with shorter price or accepting all bets regardless of price movements.		
e. This requirement does not intend to capture currency fluctuations		
RTS requirement 2D	N/A	
Customer who choose to use third party user interfaces must be informed that applications may not display full information about their gambles.		

UKGC RTS Requirements	Compliance Status	Comment
RTS implementation guidance 2D		
Information should be included in terms and conditions, rules or other general information about the gambling product that is made available to and/or sent out to customers.		
RTS requirement 2E This provision comes into force on 31 October 2021		
All gaming sessions must clearly display a customer's net position, in the currency of their account or product (e.g. pounds sterling, dollar, Euro) since the session started.	Compliant	
RTS Implementation guidance 2E		
Net position is defined as the total of all winnings minus the sum of all losses since the start of the session.	Compliant	
RTS 3 – Rules, game descriptions and the likelihood of winning		
Gaming (including bingo), lotteries and betting on virtual events		
RTS aim 3		
To enable customers to make informed decisions about whether to gamble based on their chances of winning, the way the game, lottery or event works, the prizes or payouts on offer and the current state of multi-state games or events.	Acknowledged	
RTS requirement 3A		
An explanation of the applicable rules must be easily available to the customer before they commit to gamble. The content including artwork and text must be accurate, and sufficient to explain all of the applicable rules and how to participate. All reasonable steps must be taken to ensure that the content is understandable.	Compliant	All selections made by the customer are clearly displayed on the bet screen.
RTS implementation guidance 3A		
a. Explanatory content includes information in artwork and text displayed within the virtual event, in 'help' or 'how to play' pages, or other supporting material.	Compliant	The game help page with instructions on how to play is available to customers.
b. Links to the information should be prominently placed, for example on home pages for gaming sections, game selection pages or menus, or within individual games, so that customers can easily locate them.	Compliant	The link to the online pay tables and game rules is located on the bet screen and customers can access this information at any time.
c. As a minimum, restricted display devices should provide explanatory content via a menu item or other link.	Compliant	
d. The following items provide guidelines on the type of explanatory content that may be relevant and should be considered for inclusion:		
i. the name of the game, lottery or virtual event	Compliant	The name of the game is displayed on the bet screen.
ii. the applicable rules, including clear descriptions of what constitutes a winning outcome	Compliant	The link to the online pay tables and game rules is located on the bet screen and customers can access this information at any time.
iii. restrictions on play or betting, such as any play duration limits, maximum wins, etc	Compliant	All restrictions on play or betting are explained in the game rules.



UKGC RTS Requirements	Compliance Status	Comment
iv. the number of decks or frequency of shuffles in virtual card games	N/A	
v. whether there are contributions to jackpots (progressives) and the way in which the jackpot operates, for example, whether the jackpot is won by achieving a particular outcome	N/A	
vi. instructions on how to interact with the game	Compliant	
vii. rules pertaining to metamorphosis of games, for example, the number and type of tokens that need to be collected in order to qualify for a feature or bonus round and the rules and behaviour of the bonus round	N/A	The game is not a metamorphic game.
viii. the rules for entering a single lottery draw or a series of lottery draws and the frequency of the draws.	N/A	
RTS requirement 3B		
Where relevant, as the game or event progresses, information that may reasonably be expected to enable the customer to understand the current state must be displayed.	Acknowledged	
RTS implementation guidance 3B		
The following items provide guidelines on the type of information that may be relevant.		
a. Where a game builds up a collection of tokens (symbols etc), the current number collected.	N/A	
b. An indication of which rules are currently relevant, such as displaying 'bonus round' or other feature labels.	Compliant	
c. This requirement does not apply to lotteries.	Acknowledged	
RTS requirement 3C		
For each virtual event, game (including bingo), or lottery, information that may reasonably be expected to enable the customer to make an informed decision about his or her chances of winning must be easily available before the customer commits to gamble. Information must include:		
i. a description of the way the game works and the way in which winners are determined and prizes allocated	Compliant	
ii. house edge (or margin)	N/A	
iii. the return to player (RTP) percentage or	Compliant	
iv. the probability (likelihood) of winning events occurring.	Compliant	
RTS implementation guidance 3C		
a. The following items provide further guidance on acceptable types of information about the likelihood of winning:		
i. for types of peer-to-peer games where the likelihood of winning may depend on skill and/or the actions of other participants, a description of the way the game works and how winners are determined will be sufficient	N/A	
ii. for bingo, and some types of lottery or other games where it is not possible to determine the likelihood of winning because it depends on the eventual number of participants, a description of the way in which prizes are allocated will be sufficient	N/A	

UKGC RTS Requirements	Compliance Status	Comment
iii. the average theoretical return to player percentage. Where an event (other than peer-to-peer) involves an element of skill, return to player percentage should be calculated using either the auto-play strategy or a standard/published strategy	N/A	
iv. the house edge, margin or over-round, for example for a virtual race	N/A	
v. the probability of each winning event occurring, or such information as may reasonably be expected to allow the customer to calculate the probability that the event will occur.	Compliant	
The nature of some games may mean that the game itself provides sufficient information, for example, the likelihood of rolling a six on a six-sided die would not require further explanation.	N/A	
vi. The odds displayed in virtual event betting should reflect the probability of each event occurring as closely as possible.	N/A	
b. Information may be included in artwork and text displayed within the virtual game or event, in 'help' or 'how to play' pages, or other supporting material.	Compliant	The game rules and pay tables provide a description of how the game works and winning prizes are determined.
c. Information should be easily accessible, for example by placing links on home pages for gaming or virtual event sections, game selection pages or menus, or within individual games.	Compliant	The link to game rules and pay tables is located on the bet screen and customers can access this page at any time.
RTS requirement 3D		
For each virtual event, game (including bingo), or lottery, content describing the potential prizes and payouts or the means by which these are calculated or determined must be easily available before the customer commits to gamble.	Compliant	
RTS implementation guidance 3D		
a. Information should be made available about the amounts that customers may potentially win, for example in the form of pay-tables, or by showing the odds paid for particular outcomes.	Compliant	The winning amount is displayed.
b. For peer-to-peer games where the prize is determined based on the actions of the participants, a description of the way the game works and the rake or commission taken will be sufficient.	N/A	The game is not a peer-to-peer game.
c. For lotteries and other types of events where the potential amount or prize paid out may not be known before the customer commits to gamble, describing the way in which the prize amount is determined will be sufficient.	N/A	
d. Information may be included in artwork and text displayed within the virtual event, in 'help' or 'how to play' pages, or other supporting material.	Compliant	A payable including all payouts is always available through a link located on the bet screen.
e. Information should be easily accessible, for example by placing links on home pages for gaming sections, game selection pages or menus, or within individual games.	Compliant	
f. Displays of jackpot amounts that change over time (progressives) should be updated as frequently as practicable, particularly after the amount has been reset following a win.	N/A	



UKGC RTS Requirements	Compliance Status	Comment
RTS 4 – Time-critical events		
Gaming (including bingo), and betting on virtual events		
RTS aim 4		
To reduce the risk that customers are unfairly disadvantaged by technical factors that may affect speed of response, and to ensure customers are made aware of the risk	Acknowledged	
RTS requirement 4A		
Where speed of interaction has a significant effect on the customer’s chance of winning, operators must assess the level of risk and demonstrate to the Commission that they are taking reasonable steps to reduce the risk to customers.	N/A	The speed of interaction does not affect the customer’s chance of winning.
RTS implementation guidance 4A		
Examples of possible approaches include:		
a. estimating the degree of network latency (delay) a customer is experiencing and displaying regularly updated information to the customer about any disadvantage that they may be operating under (eg high, medium, low)		
b. applying a handicapping system based on estimated performance and/or system latency		
c. treating winning responses that arrive within a period of time as simultaneous and implementing a policy on how simultaneous wins are to be dealt with.		
RTS requirement 4B		
For time-critical events, the customer should be informed that they might be at a disadvantage because of technical issues such as slower network speeds, or slower end user device performance.	N/A	Slower network speeds or slower end-user device performance do not affect the game outcomes.
RTS implementation guidance 4B		
a. Information should be included in game descriptions, rules, ‘help’ or ‘how to play’ pages.		
RTS 5 – Result determination		
All gambling		
RTS aim 5		
To ensure that the gambling system implements the operator’s rules, game rules and betting rules as they are described to the customer.	Acknowledged	
RTS requirement 5A		
All reasonable steps should be taken to ensure that gambles are accepted, processed and settled in accordance with the operators’ published terms and rules, and the rules of the specific game, event, or bet.	Compliant	
Where unexpected system flaws, faults, or errors that affect the customer occur, steps are to be taken as soon as practicable to remedy the problem and ensure that the customer is treated fairly according to the circumstances.	Compliant	
RTS implementation guidance 5A		
a. Under normal operation, in the absence of technical faults, the system should act in accordance with the rules.	Compliant	The game operates and interacts with the customer in accordance with the published game rules.



UKGC RTS Requirements	Compliance Status	Comment
b. Reasonable steps include testing of systems and new products against the published rules and monitoring the ongoing performance of those products in the live environment. Refer to our testing strategy for more detailed requirements in this area.	Out of scope	This requirement is related to operational procedures and hence it is the operator's responsibility.
c. Customers should be notified when errors that affect them, for example, incorrectly settled bets, have occurred as soon as practicable after the event occurs. Steps should be taken to rectify the error, for example, by manually adjusting the customer's account.	Out of scope	This requirement is related to operational procedures and hence it is the operator's responsibility.
RTS 6 – Result determination for play-for-free games		
Gaming (including bingo), lotteries, and betting on virtual events		
RTS aim 6		
To minimise the risk that customers are misled about the likelihood of winning due to the behaviour of play-for-free games.	Acknowledged	
RTS requirement 6A		
Play-for-free games must implement the same game rules as the corresponding play-for-money games offered on the same facilities (ie the same website). Operators must take all reasonable steps to ensure that play-for-free games accurately represent the likelihood of winning and prize distribution in the play-for-money game. For the purpose of this requirement playing a game includes participating in a lottery and/or betting on a virtual event.	Compliant	Play-for-free games implement the same game rules as the corresponding play-for-money games.
RTS implementation guidance 6A		
a. The play-for-free game should use the same RNG as the corresponding play-for-money games, another RNG that fulfils the requirements set out in RTS requirement 7A, or a publicly available RNG, (such as those available as standard within operating systems) that may reasonably be expected to produce no systematic bias.	Compliant	The play-for-free game uses the same RNG as the corresponding play-for-money games.
b. Where 6A is not reasonably possible, it should be demonstrated that the method of producing outcomes does not introduce a systematic bias, for example:	N/A	
i. if tables of random numbers are used, they should be sufficiently long to support a large number of games without repeating		
ii. the method should represent game probabilities accurately, ie it should not produce a higher than expected proportion of winning outcomes.		
c. The prize distribution should accurately represent the play-for-money game. For example, where play-for-free games use virtual cash, the virtual cash payouts should be the same as the corresponding play-for-money game, and where tokens are used, the allocation of tokens as prizes should be proportionate to the stakes and prizes in the play-for-money game.	Compliant	



UKGC RTS Requirements	Compliance Status	Comment
<p>d. Where videos are used to advertise a game’s features it should be made clear to consumers where footage has been edited or sped-up for promotional purposes. Similarly, where a non-consumer (eg supplier’s) website is demonstrating a game with higher than normal returns (ie on a website that is different to the real money gambling facility websites) it should be made clear that it is a demonstration game specifically designed to demonstrate the bonus features.</p>	N/A	No demonstration video is available
RTS 7 – Generation of random outcomes		
Gaming (including bingo), lotteries, and betting on virtual events		
RTS aim 7		
To ensure that games and other virtual events operate fairly.	Acknowledged	
RTS requirement 7A	Compliant	Refer to the RNG report: “NMI-049-044-UK-RTS-01-Report_en.pdf”.
Random number generation and game results must be ‘acceptably random’. Acceptably random here means that it is possible to demonstrate to a high degree of confidence that the output of the RNG, game, lottery and virtual event outcomes are random through, for example, statistical analysis using generally accepted tests and methods of analysis. Adaptive behaviour (ie a compensated game) is not permitted.		
Where lotteries use the outcome of other events external to the lottery, to determine the result of the lottery the outcome must be unpredictable and externally verifiable.		
RTS implementation guidance 7A		
a. RNGs should be capable of demonstrating the following qualities:		
i. the output from the RNG is uniformly distributed over the entire output range and game, lottery, or virtual event outcomes are distributed in accordance with the expected/theoretical probabilities		
ii. the output of the RNG, game, lottery, and virtual event outcomes should be unpredictable, for example, for a software RNG it should be computationally infeasible to predict what the next number will be without complete knowledge of the algorithm and seed value		
iii. random number generation does not reproduce the same output stream (cycle), and that two instances of a RNG do not produce the same stream as each other (synchronise)		
iv. any forms of seeding and re-seeding used do not introduce predictability		
v. any scaling applied to the output of the random number generator maintains the qualities above.		
b. For lotteries using external events - where it is not practical to demonstrate 7A the events outcomes should be:		
i. unpredictable, that is, events should be selected only where they may reasonably be assumed to be random events		



UKGC RTS Requirements	Compliance Status	Comment
ii. unable to be influenced by the lottery operator (or external lottery manager)		
iii. publicly available and externally verifiable, for example, events that are published in local or national press would be acceptable.		
c. For games or virtual events that use the laws of physics to generate the outcome of the game (mechanical RNGs), the mechanical RNG used should be capable of meeting the requirements in a. where applicable and in addition:		
i. the mechanical pieces should be constructed of materials to prevent decomposition of any component over time (eg a ball shall not disintegrate)		
ii. the properties of physical items used to choose the selection should not be altered		
iii. players should not have the ability to interact with, come into physical contact with, or manipulate the mechanics of the game.		
d. Restricting adaptive behaviour prohibits automatic or manual interventions that change the probabilities of game outcomes occurring during play. Restricting adaptive behaviour is not intended to prevent games from offering bonus or special features that implement a different set of rules, if they are based on the occurrence of random events.		
RTS requirement 7B		
As far as is reasonably possible, games and events must be implemented fairly and in accordance with the rules and prevailing payouts, where applicable, as they are described to the customer.	Compliant	
RTS implementation guidance 7B		
a. Games should implement the rules as described in the rules available to the customer before play commenced.	Compliant	
b. The mapping of the random inputs to game outcomes should be in accordance with prevailing probabilities, pay tables, etc.	Compliant	
c. When random numbers, scaled or otherwise, are received, eg following a game requesting a sequence of random numbers, they are to be used in the order in which they are received. For example, they may not be discarded due to adaptive behaviour.	Compliant	The random numbers are used in the order they are received from the RNG. No random numbers are discarded by the game.
d. Numbers or sequences of numbers are not to be discarded, unless they fall outside the expected range of numbers required by the virtual event – such an occurrence should result in an error being logged and investigated.	Compliant	The RNG provides scaled random numbers according to the range required by the game. The scaled numbers do not fall outside the expected range required by the game. No random numbers are discarded by the game.
RTS requirement 7C		



UKGC RTS Requirements	Compliance Status	Comment
Game designs or features that may reasonably be expected to mislead the customer about the likelihood of particular results occurring are not permitted, including substituting losing events with near-miss losing events and simulations of real devices that do not simulate the real probabilities of the device.	Compliant	
RTS implementation guidance 7C		
a. Where a virtual event simulates a physical device, the theoretical game probabilities should match the probabilities of the real device (for example, the probability of a coin landing heads must be 0.5 every time the coin is tossed).	N/A	
b. Where multiple physical devices are simulated the probabilities of each outcome should be independent of the other simulated devices.	N/A	
c. Games may not falsely display near-miss results, that is, the event may not substitute one losing outcome with a different losing outcome.	Compliant	The game does not display near-miss results.
d. Where the event requires a pre-determined layout (for example, hidden prizes on a map), the locations of the winning spots should not change during play, except as provided for in the rules of the game.	N/A	There is no pre-determined layout of the game results.
e. Where games involve an element of skill, every outcome described in the virtual event rules or artwork should be possible, that is, the customer should have some chance of achieving an advertised outcome regardless of skill.	N/A	The game does not involve any element of skill or judgment.
f. Where a customer contributes to a jackpot pool, that customer should be eligible to win the jackpot whilst they are playing that game, in accordance with the game and jackpot rules.	N/A	
RTS requirement 7D		
The rules, payouts and outcome probabilities of a virtual event or game may not be changed while it is available for gambling, except as provided for in the rules of the game, lottery or virtual event. Such changes must be brought to customer’s attention.	Out of scope	The scope of the evaluation is limited to game design, gameplay, and fairness. Evaluation of game management / operational procedures and controls is out of scope.
RTS implementation guidance 7D		
a. Changes to game or event rules, paytables or other parameters that change the way in which a game, lottery, or event works, the winnings paid, or likelihood of winning (except as described in 7Dc), should be conducted with the game or event taken offline or suspended.	Out of scope	The scope of the evaluation is limited to the game design, gameplay, and fairness. Evaluation of game management / operational procedures and controls is out of scope.
b. Altered games, lotteries, and events should display a notice that informs customers that the game or event has been changed, for example, ‘rules changed’, ‘new odds’, or ‘different payouts’. The notice should be displayed on game selection screens and on the events themselves if it is possible for the customer to go straight to the event without using a selection screen.	Out of scope	The scope of the evaluation is limited to game design, gameplay, and fairness. Evaluation of game management / operational procedures and controls is out of scope.
c. This requirement is not intended to prevent games and virtual events where specified changes occur legitimately, in accordance with the game or event rules, for example:		



UKGC RTS Requirements	Compliance Status	Comment
i. virtual events, such as virtual racing products where the odds differ from event to event depending on the virtual runners	N/A	
ii. virtual games, such as bingo where the odds of winning are dependent on the number of entrants	N/A	
iii. games with progressive jackpots, where the amount that can be won changes over time	N/A	
iv. games with bonus rounds where different rules apply, so long as these rounds are properly described to the customer	N/A	
v. unspecified changes to rules, paytables or other parameters that change the way in which a game, lottery or event works are not permitted, for example, rules that state 'game rules may be changed at any time' would not be acceptable.	Compliant	The game rules do not have any such provision.
RTS requirement 7E		
Except in the case of subscription lotteries, the system clearly and accurately display the result of the game or event and the customer's gamble. The result must be displayed for a length of time that may reasonably be expected to be sufficient for the customer to understand the result of the game or event in the context of their gamble.	Compliant	
RTS implementation guidance 7E		
The game artwork and text should be sufficient to provide the customer with all of the information required to determine whether they have lost or won, and the value of any winnings.	Compliant	The game results are displayed for a reasonable length of time for the customer to see and understand the results.
RTS 8 – Auto-play functionality In respect of requirement RTS 8A & 8B – Gaming (except slots) In respect of requirement RTS 8C - Slots		
RTS aim 8		
To ensure that the customer is still in control of the gambling where auto-play functionality is provided and to minimise the risk that the functionality disadvantages a customer or that auto-play or other strategy advice is misleading.	Acknowledged	
RTS requirement 8A		
The gambling system must provide easily accessible facilities that:		
a. make available the following three controls, each of which stops auto-play functionality when it is triggered.	N/A	
i. 'loss limit', ie where the player selects an option to not lose more than X from their starting balance, where X is an amount that can be selected by the player. A 'loss' in this context equates to accumulated auto-play bets minus accumulated auto-play wins.		
ii. 'single win limit' ie single win greater than Y where Y is an amount that can be selected by the player and		
iii. 'jackpot win' (where applicable).		
b. require auto-play to be implemented in such a way that each time a customer chooses to use auto-play they must select the stake, the number of auto-play gambles and at least the first of the above three controls.	N/A	

UKGC RTS Requirements	Compliance Status	Comment
The number of auto-play gambles must not exceed 100 in one batch. During auto-play the customer must be able to stop the auto-play regardless of how many auto-play gambles they initially chose or how many remain.	N/A	
RTS implementation guidance 8A		
a. Auto-play should not override any of the display requirements (for example, the result of each gamble must be displayed for a reasonable length of time before the next gamble commences, as set out in RTS 7E).	N/A	
RTS requirement 8B		
In relation to skill and chance games, strategy advice and auto-play functionality must be fair, not misleading and must not represent a poor choice.	N/A	
RTS implementation guidance 8B		
In implementing this control, the following should be considered, where appropriate:		
i. if there is a standard strategy, for example, for well-known games like blackjack, the standard strategy should be used		
ii. strategies or auto-play should (theoretically) produce at least the average Return to Player (RTP) for the game over time.		
RTS requirement 8C This provision comes into force on 31 October 2021		
The gambling system must require a customer to commit to each game cycle individually. Providing auto-play for slots is not permitted.	Compliant	
RTS 9 – Progressive jackpot systems	N/A	This game is not linked with the progressive jackpot
Gaming (including bingo)		
RTS aim 9		
To ensure that progressive jackpot systems operate fairly.		
RTS requirement 9A		
An explanation of the jackpot rules must be clearly available to the customer before they commit to gamble.		
RTS implementation guidance 9A		
a. The rules for a jackpot shall describe how it is funded, what the start-up seed and any ceiling values are. The jackpot system's return to player percentage should be displayed as per RTS 3C, this could be one combined game and progressive jackpot RTP figure or broken down into the base game and jackpot component. If a player is not eligible for a game's progressive jackpot prize this should be made clear, along with their respective theoretical RTP.		
b. The rules for a jackpot shall describe how the prizes are determined and awarded, including what happens when two or more players simultaneously trigger the same jackpot, or appear to simultaneously trigger the jackpot, for example due to network latency issues.		

UKGC RTS Requirements	Compliance Status	Comment
c. All eligible players should be able to see the current jackpot values and these should be updated as frequently as is practicable, particularly after the amount has been reset following a win.		
d. Where a jackpot is capped at a ceiling value, an explanation of how subsequent player contributions are handled should be provided (eg the operation of any redirected overflow or reserve pools).		
RTS requirement 9B		
Jackpot systems must be configured and operated with adequate fairness and security.		
RTS implementation guidance 9B		
a. The gambling system shall maintain strict access and logging controls over the configuration and changes made to live jackpots.		
b. Where a customer contributes to a jackpot pool, that customer should be eligible to win the jackpot whilst they are playing that game. The chances of winning a jackpot should increase in correlation with the amount contributed.		
c. Where a jackpot containing player contributions is decommissioned those contributions need to be returned fairly according to the circumstances, with priority given to the players who made the contributions. Some example methods to achieve this include:		
i. waiting until the jackpot is next awarded before decommissioning it.		
ii. adding any remaining contributions onto another jackpot system, preferably one with a similar player base.		
iii. returning remaining contributions as a one off event, with adequate customer disclosure to explain the origin of money.		
d. The gambling system shall ensure that a winning customer is notified of a jackpot win immediately after it is triggered and that other participating customers are adequately notified of the jackpots reset value.		
RTS 10 – Interrupted gambling		
Peer-to-peer betting and gaming (including bingo)		
RTS aim 10		
To ensure that customers are treated fairly in the event of interrupted play or betting and that they are aware of how they will be treated if interruptions occur.	Acknowledged	
RTS requirement 10A		
Operators must take all reasonable steps to ensure that their policies for instigating or dealing with service interruptions are fair and do not systematically disadvantage customers.	Compliant	
RTS implementation guidance 10A		
a. For gaming the following policies should be applied:		
i. where an interruption occurs after the operator receives notification of the customer's gamble and where the customer can have no further influence on the outcome of the event or gamble the results of the gamble should stand	Compliant	



UKGC RTS Requirements	Compliance Status	Comment
ii. where an interruption to a single-participant single stage event occurs before an outcome has been generated the customer should have any deducted stake returned to their balance	Compliant	The incomplete game is provided if the player reconnects on time.
iii. for stateful games (games where there are multiple stages or decision points), all reasonable steps should be taken to restore the game to its last known state to enable the customer to complete the game	N/A	
iv. games with multiple participants (equal chance or otherwise) should be dealt with fairly on a case-by-case basis	N/A	
v. progressive jackpot values should be restored to their pre-failure state.	N/A	
b. For peer-to-peer betting the following policies should be applied:	N/A	The game is not a peer-to-peer game.
i. where a service interruption is caused by failures in the gambling system, operators should suspend betting on all betting markets that have been affected by a significant event before service is restored		
ii. other failures should be dealt with fairly on a case-by-case basis.		
RTS requirement 10B	Out of scope	This section relates to the functionality of the backend and is, therefore, out of scope.
Systems must be capable of recovering from failures that cause interruptions to gambling, including where appropriate, the capability to void gambles (with or without manual intervention), the capability to suspend betting markets, and taking all reasonable steps to retain sufficient information to be able to restore events to their pre-failure state.		
RTS implementation guidance 10B		
a. For gaming the system should:		
i. be capable of voiding gambles and restoring the amount gambled to the customer automatically, or in conjunction with manual operational controls; and		
ii. implement all reasonable measures to maintain sufficient information to be capable of automatically restoring an event to its pre-failure state so that it may be completed by the customer. The following information should be restored, as appropriate:		
• the state of a deck of cards, and any hands that have been dealt		
• number of tokens collected		
• any other predetermined information, such as maps or prize layouts		
• the value of any progressive jackpots		
• the state of any gambles, eg who has staked what on what outcome		
• bets placed or offered.		
b. For peer-to-peer betting, it should be possible to suspend betting markets manually or automatically.		
RTS requirement 10C	Out of scope	The scope of the evaluation is limited to game design, gameplay, and fairness. This



UKGC RTS Requirements	Compliance Status	Comment
		requirement is related to operational procedures and hence it is the operator's responsibility.
Operators must make available information about their policies regarding service interruptions in various different circumstances.		
RTS implementation guidance 10C		
Operators should make information available to customers about how they will be treated in various common scenarios. However, this does not mean that operators have to detail all possible scenarios or responses to service interruptions.		
RTS 11 – Limiting collusion/cheating	Out of scope	
RTS aim 11		
To reduce the risk that cheating or collusion by players unfairly disadvantages another player and to inform customers about the risks posed.		
RTS requirement 11A		
Measures intended to deter, prevent, and detect collusion and cheating must be implemented. Gambling systems must retain a record of relevant activities to facilitate investigation and be capable of suspending or disabling player accounts or player sessions. Operators must monitor the effectiveness of their policies and procedures.		
RTS implementation guidance 11A		
a. Relevant activities to be recorded will vary by game but may include:		
i. which players played at which tables		
ii. the amounts won from and lost to accounts		
iii. game activities to an individual bet/action level.		
b. Where appropriate, prevention measures may include:		
i. taking steps to prevent a player from occupying more than one seat at any individual table.		
c. Detection measures may include, detecting and investigating the following, where appropriate:		
i. players who frequently share the same tables		
ii. players from same address who share the same table		
iii. suspicious patterns of play (such as chip dumping)		
iv. unusual gameplay statistics.		
d. Customer complaints about cheating should be investigated.		
e. Records should be kept of investigations which result in an account being closed including:		
i. player details (name, location, which licence the activity was in reliance on), scale of the offences (financial and number of players), time and date etc		
ii. the reason for investigation (including whether it was initiated by customer contact) and the outcome		
iii. any relevant evidence such as reports, screenshots, chat history etc. This information should be considered when updating the risks identified in relevant policies and procedures.		
RTS requirement 11B		

UKGC RTS Requirements	Compliance Status	Comment
Information must be made available about the operator's policies and procedures with regard to cheating, recovered player funds and about how to complain if a customer suspects other participants are cheating.		
RTS implementation guidance 11B		
a. As a minimum deterrent, customers should be informed that accounts will be closed if the customer is found to have cheated.		
b. Information regarding funds that are recovered from accounts during integrity investigations is not expected to cover every scenario but should highlight the main aims of the policy.		
c. Relevant information should be included in terms and conditions or rules.		
RTS 12 – Financial limits	Out of scope	This section relates to the functionality of the backend and is, therefore, out of scope.
All gambling - except subscription lotteries		
RTS aim 12		
To provide customers with facilities that may assist them in sticking to their personal budgets for gambling with the operator. Customers must also be given the option to set financial limits at an account level.		
RTS requirement 12A		
The gambling system must provide easily accessible facilities that make it possible for customers to impose their own financial limits. Customers must be given the opportunity to set a limit as part of the registration process (or at the point at which the customer makes the first deposit or payment).		
RTS implementation guidance 12A		
a. For telephone gambling (except lotteries), customers should be asked if they would like to set a deposit or spend limit when they register. Customers should be able to request a limit at any point after registration. The limit should be implemented as soon as practicable after the customer's request. The customer should be informed when the limit will come into force.		
b. For other access media (including internet, interactive TV and mobile), customers should be offered the opportunity to select a deposit/spend limit from a list which may contain a 'no limit' option or to enter a limit of their choice as part of the registration or first deposit process. The 'no limit' option should not be the default option.		
c. Limits could be in the form of:		
i. deposit limits: where the amount a customer deposits into their account is limited over a particular duration		
ii. spend limits: where the amount a customer spends on gambling (or specific gambling products) is restricted for a given period – this type of limit may be appropriate where the customer does not hold a deposit account with the operator		

UKGC RTS Requirements	Compliance Status	Comment
iii. loss limits: where the amount lost (ie winnings subtracted from the amount spent) is restricted (for instance when a customer makes a £10 bet and wins £8, the loss is £2).		
d. The period/duration of the limits on offer should include:		
i. 24 hours and		
ii. 7 days and		
iii. one month		
e. In addition:		
i. limits may be implemented per customer, per account, or other means		
ii. limits could also be implemented across all products or channels or for individual products or channels. Where limits are also set across separate products it should be clear to customers using the facility that a limit will need to be set for each individuals product. For example, where a limit has been set for a specific game a customer should not be misled into assuming that the limit automatically applies to other products.		
iii. financial limit facilities should be provided via a link on the home page		
iv. facilities should be available on deposit pages/screens or via a link on these pages/screens		
v. where a customer sets simultaneous time frames, for example a daily deposit limit and a weekly limit, the lowest limit should always apply. Therefore if a daily deposit limit of £10 and a weekly limit of £100 are both set then the maximum the system should allow to be deposited is £10 per day and £70 per week.		
RTS requirement 12B		
All reasonable steps must be taken to ensure that customer-led limits are only increased at the customer's request, only after a cooling-off period of 24 hours has elapsed and only once the customer has taken positive action at the end of the cooling off period to confirm their request.		
RTS implementation guidance 12B		
Where possible (for instance, unless systems/technical failures prevent it) limit reductions are to be implemented within 24 hours of the request being received. In addition, at the point at which the customer requests a decrease in their limit, they should be informed when the limit reduction will take effect.		
RTS 13 – Time requirements and reality checks		
In respect of requirement RTS 13A – All remote gambling except telephone gambling		
In respect of RTS 13B – Remote gaming (including bingo but excluding peer to peer gaming), remote instant win lotteries and high frequency lotteries.		
In respect of RTS 13C – Slots.		
RTS aim 13		



UKGC RTS Requirements	Compliance Status	Comment
To provide customers with facilities to assist them to keep track of the time they spend gambling.	Acknowledged	
RTS requirement 13A		
Where the gambling system uses full screen client applications that obscure the clock on the customer's device the client application itself must display the time of day or the elapsed time since the application was started, wherever practicable.	Compliant	The clock on the customer's device is always visible.
RTS implementation guidance 13A		
a. Time of day should either be taken from the customer's own device or 'server time' and should be displayed in hours and minutes.	Compliant	The customer device's built-in clock is displayed in hours and minutes and is always visible.
b. Operators will not be expected to detect whether or not customers have hidden their clocks.	Compliant	
c. Elapsed time should be displayed in minutes and hours.	Compliant	
d. For restricted display devices, time of day or elapsed time should be displayed where the device supports it.	Compliant	
e. In addition, customers may be offered the ability to set a session or game-play duration reminder.	N/A	
RTS requirement 13B		
The gambling system must provide easily accessible facilities that make it possible for customers to set a frequency at which they will receive and see on the screen a reality check within a gaming session. A 'reality check' means a display of the time elapsed since the session began. The customer must acknowledge the reality check for it to be removed from the screen.	Compliant	The reality check message is displayed on the screen during gameplay. The customer must acknowledge the reality check for it to be removed from the screen. Testing has been performed in a test environment. The operators are responsible for providing facilities for customers to set a frequency at which they will receive and see the reality check message
RTS implementation guidance 13B		
a. The customer should be offered the opportunity to set or amend a reality check via easily accessible means at all times. Customers should be able to select a frequency at which the reality check will appear on the screen. Customers can be presented with a pre-set list time periods but these must have a reasonable and appropriate range from which to select and where a default time period is offered it must be set at the minimum	Out of scope	Testing has been performed in a test environment. The operators are responsible for providing facilities for customers to set a frequency at which they will receive and see the reality check message
b. The reality check should continue to appear at the selected time intervals until the customer's gaming session ends (see definition of terms) or the customer exits their account (this will depend on solutions i ii iii below). If a customer is participating in multiple gaming sessions at once (eg playing bingo as well as participating in slots games in between draws) the gaming session began when the player commenced with the first product. The reality check facility could be implemented via one of the following ways:	Out of scope	The reality check continues to appear at the selected time intervals until the customer chooses to exit the game The operators are responsible for providing facilities for customers to set a frequency at which they will receive and see the reality check message base on player account or gaming sessions.

UKGC RTS Requirements	Compliance Status	Comment
i. Player account level implementation. There are two potential solutions for account level implementation. The optimum approach would enable customers to set a reality check reminder for their account, which would commence at the start of the first gaming session and roll over to subsequent sessions. An alternative solution would be for the reality check to commence before a customer accesses a gaming session (eg at account log in stage). The second solution would meet the requirement although it would not take into account natural breaks in play, such as when customers are in the casino lobby.		
ii. Product level implementation. This approach will enable a customer to set a reality check for each individual gaming session, for example the player commences playing roulette and then later starts playing blackjack and has two reality checks running concurrently but covering different time periods.		
iii. Hybrid solution. Some games are subject one reality check and others are subject to another for example all slot games are subject to a single reality check and live dealer products are subject to a separate reality check.		
A clear explanation of how the reality check is implemented must be provided to players so they are aware of how they can use it to assist them in managing their gambling. Where possible a player's preferences should be applied to all future account logins or gaming sessions (where applicable). If this is not possible players must be provided with clear information that explains that they will have to set a reality check for each account login or gaming session.		
c. The reality check should offer the customer the facility to exit the gaming session or log out of their account (depending on which of the above solutions is adopted).		
d. The reality check should provide a link to the customer's account history.		
e. The reality check can be presented at the end of a game but a player cannot be permitted to commit further funds to a new game until they have acknowledged the reality check, unless it occurs mid-way through a multi-state game such as blackjack where a player would need to commit additional funds if they wanted to split or double down.		
f. The reality check must prevent a new game within an auto-play sequence from commencing until the player has acknowledged the reality check.	N/A	
RTS Requirement 13C This provision comes into force on 31 October 2021		
The elapsed time should be displayed for the duration of the gaming session.	Compliant	
RTS Implementation guidance 13C		
a. Time displayed should begin either when the game is opened or once play commences.	Compliant	
b. Elapsed time should be displayed in seconds, minutes and hours.	Compliant	Elapsed time is displayed on the bet screen

UKGC RTS Requirements	Compliance Status	Comment
RTS 14 – Responsible product design		
In respect of requirements RTS 14A and 14B - All gambling In respect of requirement RTS 14C – 14F - Slots		
RTS aim 14		
To ensure that products are designed responsibly and to minimise the likelihood that they exploit or encourage problem gambling behaviour.	Acknowledged	
RTS requirement 14A		
Gambling products must not actively encourage customers to chase their losses, increase their stake or increase the amount they have decided to gamble, or continue to gamble after they have indicated that they wish to stop.	Compliant	
RTS implementation guidance 14A		
a. By actively encourage, we mean the inclusion of specific features, functions or information that could reasonably be expected to encourage a greater likelihood of the behaviours described occurring. For example:		
i. the amount of funds taken into a product should not be topped up without the customer choosing to do so on each occasion, eg when a customer buys-in at a poker table they should have to choose to purchase more chips to play at the table- automatic rebuys should not be provided.	Out of scope	This requirement is the operator's responsibility.
ii. written or graphical information should not encourage customers to try to win back their losses	Compliant	
iii. customers who have chosen to exit a game should not be encouraged to continue playing by, for example, being offered a free game.	Compliant	
b. This requirement is not intended to prevent operators from offering special features or well-known games such as blackjack that allow customers to increase their stake on the occurrence of specific events (eg split).	Acknowledged	
RTS requirement 14B The following provisions come into force on 31 October 2021	Out of scope	Operators Responsibility
Consumers must not be given the option to cancel their withdrawal request.		
RTS implementation guidance 14B		
Once a customer has made a request to withdraw funds, they should not be given the option to deposit using these funds. Operators should make the process to withdraw funds as frictionless as possible.		
RTS requirement 14C		
The gambling system must not offer functionality which facilitates playing multiple slots games at the same time.	Compliant	
RTS implementation guidance 14C		
a. Operators are not permitted to offer functionality designed to allow players to play multiple slots at the same time. This includes, but is not limited to, split screen or multi-screen functionality.	Compliant	

UKGC RTS Requirements	Compliance Status	Comment
b. Combining multiple slots titles in a way which facilitates simultaneous play is not permitted.	Compliant	
RTS requirement 14D		
It must be a minimum of 2.5 seconds from the time a game is started until the next game cycle can be commenced. It must always be necessary to release and then depress the 'start button' or take equivalent action to commence a game cycle.	Compliant	
RTS implementation guidance 14D		
<p>A game cycle starts when a player depresses the 'start button' or takes equivalent action to initiate the game and ends when all money or money's worth staked or won during the game has been either lost or delivered to, or made available for collection by the player and the start button or equivalent becomes available to initiate the next game.</p> <p>A player should commit to each game cycle individually, continued contact with a button, key or screen should not initiate a new game cycle.</p>	Compliant	
RTS requirement 14E		
The gambling system must not permit a customer to reduce the time until the result is presented.	Compliant	
RTS implementation guidance 14E	Compliant	
a. Features such as turbo, quick spin and slam stop are not permitted. This is not intended to be an exhaustive list but to illustrate the types of features the requirement is referring to.		
b. This applies to all remote slots, regardless of game cycle speed.		
c. This requirement does not apply to bonus/feature games where an additional stake is not wagered.		
RTS Requirement 14F		
The gambling system must not celebrate a return which is less than or equal to the total stake gambled.	Compliant	
RTS Implementation Guidance 14F	Compliant	
a. By 'celebrate' we mean the use of auditory or visual effects that are associated with a win are not permitted for returns which are less than or equal to last total amount staked.		
b. The following items provide guidelines for reasonable steps to inform the customer of the result of their game cycle:		
i. Display of total amount awarded.		
ii. Winning lines displayed for a short period of time that will be considered sufficient to inform the customer of the result. This implementation should not override any of the display requirements (as set out in RTS 7E).		
iii. Brief sound to indicate the result of the game and transfer to player balance. The sound should be distinguishable to that utilised with a win above total stake.		

4.2 Return to Player

Game Name	Simulation of games run	Return to Player (RTP%)	Actual RTP (calculated from simulated game results)
Bulldozer	100 million	94.02%	94.00%
	100 million	96.07%	96.02%



5 References

1. *UK Gambling Commission Remote gambling and software technical standards, February 2021.*
2. *UK Gambling Commission Testing strategy for compliance with remote gambling and software technical standards, February 2021.*
3. *RNG Report “NMI-049-044-UK-RTS-01-Report_en.pdf”, issue date. May 31, 2018*
4. *Maths spreadsheet “BullDozer Parsheet.xlsx”, no version, no date.*



Annex A : Hashes of Critical Components

The following hashes of critical components for the product tested are recorded.

Game Name	RTP	Critical File Name	SHA-1 hashes
Bulldozer	94.02%	BullDozerFactory.class	8fa6babffdc0746e350982457ef8bcfaf44c63a0e
		BullDozerGameState.Json.class	94403a4ac160e07a2f062bc3bf8b9701acd6c73c
		8212.xml	acfa9138a11282197cc727dfef6aa3508d85ab11
		BullDozerConfig.class	1574845fccc022b35a6d8015dfa436baba8dbfc8
		BaseCoin.csv	5824d41ecef0646e4678230d7fab56238eef37a3
		BaseDist.csv	2fe41f58f3db3cde7458bb986b2ee3d0e723fb57
		BaseMulti1.csv	33f3352e66b995c6c0030ac0224d657af475087b
		BaseMulti2.csv	2c904e017a9f44a408d5e6c788c70b3447fc09ff
		BaseNumWild.csv	22889e737ef443663fc0423e7f9e2ab89d827852
		BaseWeightReplacing.csv	0697b62c264ee5eafc3c413b550b2965017c3cc1
		FreeCoin.csv	ae540b7f9c893525521761c746a895d95c2235b1
		FreeDist.csv	97cb53b113594b6108d6dd49a89f45d30666666c
		FreeNumWild.csv	3e0edc96a822a74601038e1beecd9ebab125b466
		FreeWeightReplacing.csv	35529753578f06aa53edb957e5e34991f1b88fdf
		Multi1.csv	54655d2cdf34634da2c3ea70bbd1a1d8e704c669
		paylines.csv	d42ff737a9f0493420330eceb3975509eaae3091
		FREESPIN1.csv	508807e98776da9109b9acc859602c1e02930eba
		FREESPIN2.csv	b9cc58d660a2932aae2af1c8e0a7530cfc238cd5
		FREESPIN3.csv	f0874ecb335509bcb21fa3eb942d85ae0c2acb34
		HAWREEL.csv	79ad432aeae7a23152301ab985b139fbc9fb04f
	NORMAL1.csv	a2cf32d60858644cc3135ba287d927cd1b609653	
	NORMAL2.csv	b32b969a91f2524492cdf80fbdefcfa2b562d47	
	NORMAL3.csv	6b4fcd9ec85c4746aa9ba3c0fca4da11df87feda	
	NORMAL4.csv	63d082b34dd911a1f3b2337a87f97b2620778321	
	BullDozerGameState.class	61925df9c57abb20ff81afd4061d1e77c8e59aff	
	96.07%	BullDozerFactory.class	8fa6babffdc0746e350982457ef8bcfaf44c63a0e
		BullDozerGameState.Json.class	94403a4ac160e07a2f062bc3bf8b9701acd6c73c
8112.xml		4fd538d4b3cc402686f3f8688d38e4bb59862dd5	



Game Name	RTP	Critical File Name	SHA-1 hashes
		BullDozerConfig.class	1574845fccc022b35a6d8015dfa436baba8dbfc8
		BaseCoin.csv	5824d41ecef0646e4678230d7fab56238eef37a3
		BaseDist.csv	2fe41f58f3db3cde7458bb986b2ee3d0e723fb57
		BaseMulti1.csv	33f3352e66b995c6c0030ac0224d657af475087b
		BaseMulti2.csv	2c904e017a9f44a408d5e6c788c70b3447fc09ff
		BaseNumWild.csv	22889e737ef443663fc0423e7f9e2ab89d827852
		BaseWeightReplacing.csv	0697b62c264ee5eafc3c413b550b2965017c3cc1
		FreeCoin.csv	ae540b7f9c893525521761c746a895d95c2235b1
		FreeDist.csv	97cb53b113594b6108d6dd49a89f45d30666666c
		FreeNumWild.csv	3e0edc96a822a74601038e1beecd9ebab125b466
		FreeWeightReplacing.csv	35529753578f06aa53edb957e5e34991f1b88fdf
		Multi1.csv	54655d2cdf34634da2c3ea70bbd1a1d8e704c669
		paylines.csv	d42ff737a9f0493420330e3975509eae3091
		FREESPIN1.csv	508807e98776da9109b9acc859602c1e02930eba
		FREESPIN2.csv	b9cc58d660a2932aae2af1c8e0a7530cfc238cd5
		FREESPIN3.csv	f0874ecb335509bcb21fa3eb942d85ae0c2acb34
		HAWREEL.csv	79ad432aeae7a23152301ab985b139fbc9fb04f
		NORMAL1.csv	a2cf32d60858644cc3135ba287d927cd1b609653
		NORMAL2.csv	b32b969a91f2524492cdf80fbdefcfa2b562d47
		NORMAL3.csv	6b4fcd9ec85c4746aa9ba3c0fca4da11df87feda
		NORMAL4.csv	63d082b34dd911a1f3b2337a87f97b2620778321
		BullDozerGameState.class	61925df9c57abb20ff81afd4061d1e77c8e59aff
RNG		SHA1.class	db35e7c57687f8dbf7c2bad0feacc558be640b0c
		RNG.class	77481eecd6aa8f8d3bc3cb38b6942e839740fd9

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