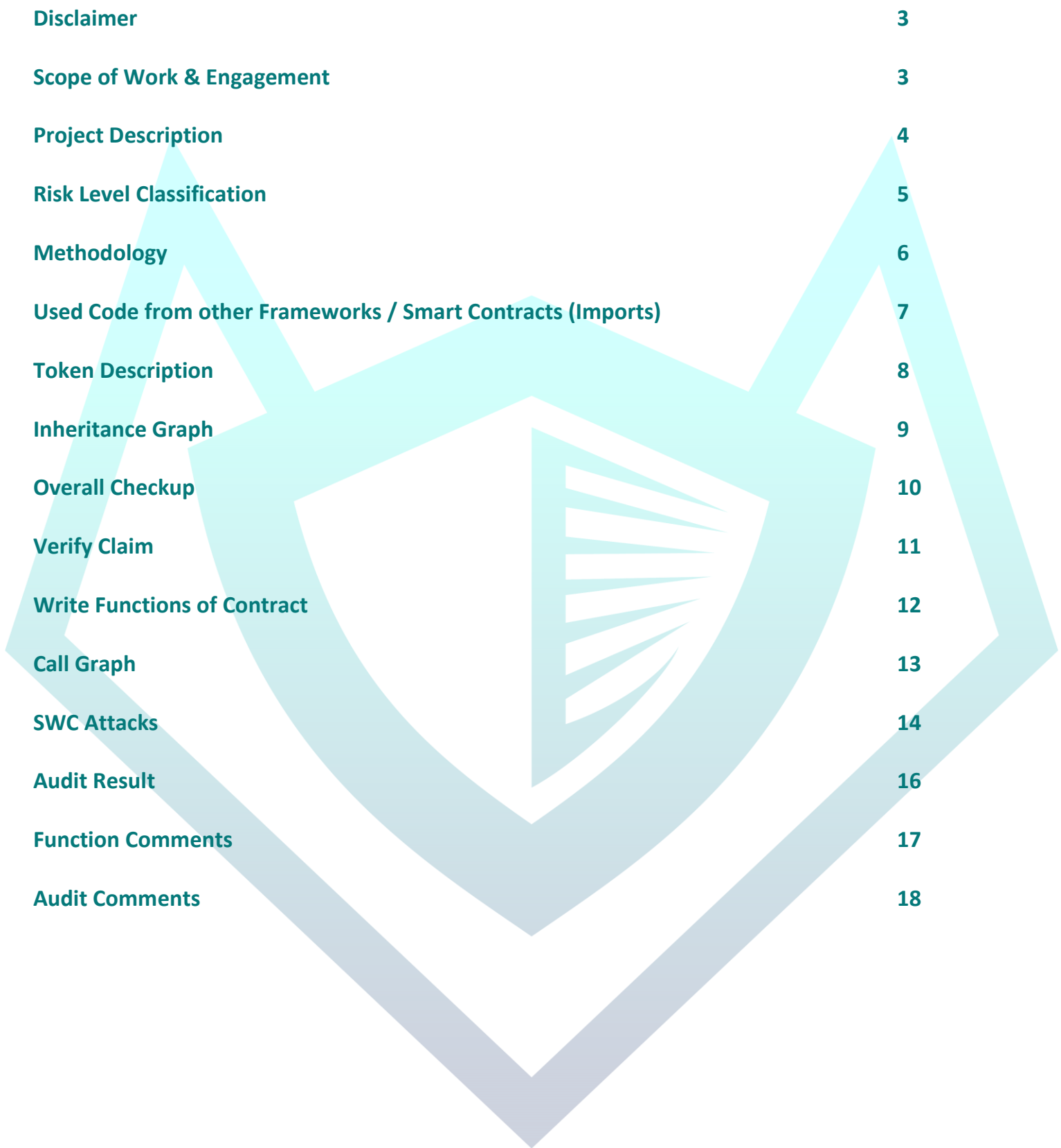# CONTRACT WOLF

Blockchain Security - Smart Contract Audits

Security Assessment

November 4, 2022

Disclaimer

ContractWolf.io audits and reports should not be considered as a form of project's "advertisement" and does not cover any interaction and assessment from "project's contract" to "external contracts" such as Pancakeswap or similar.

ContractWolf does not provide any warranty on its released reports.

ContractWolf should not be used as a decision to invest into an audited project and is not affiliated nor partners to its audited contract projects.

ContractWolf provides transparent report to all its "clients" and to its "clients participants" and will not claim any guarantee of bug-free code within it's **SMART CONTRACT**.

ContractWolf presence is to analyze, audit and assess the client's smart contract's code.

Each company or projects should be liable to its security flaws and functionalities.

Scope of Work

The **Red Pill** agreed and provided us with the files that needs to be tested (Github, Bscscan, Etherscan, files, etc.). The scope of the audit is the main contract.

The goal of this engagement was to identify if there is a possibility of security flaws in the implementation of the contract or system.

ContractWolf will be focusing on contract issues and functionalities along with the projects claims from smart contract to their website, whitepaper and repository which has been provided by the **Red Pill.**

Description

We created the RedPill Token ($RPILL) on the Ethereum blockchain, the currency of the Redpill Rebel Revolution. A token to generate support for the RedPill influencers and honour them by creating and delivering statues of themselves.

Risk Level Classification

Risk Level represents the classification or the probability that a certain function or threat that can exploit vulnerability and have an impact within the system or contract.
Risk Level is computed based on CVSS Version 3.0

Level	Value	Vulnerability
Critical	9 - 10	An Exposure that can affect the contract functions in several events that can risk and disrupt the contract
High	7 - 8.9	An Exposure that can affect the outcome when using the contract that can serve as an opening in manipulating the contract in an unwanted manner
Medium	4 - 6.9	An opening that could affect the outcome in executing the contract in a specific situation
Low	0.1 - 3.9	An opening but doesn't have an impact on the functionality of the contract
Informational	0	An opening that consists of information's but will not risk or affect the contract

Auditing Approach

Every line of code along with its functionalities will undergo manual review to check its security issues, quality, and contract scope of inheritance. The manual review will be done by our team that will document any issues that there were discovered.

Methodology

The auditing process follows a routine series of steps:

1. Code review that includes the following:

- Review of the specifications, sources, and instructions provided to ContractWolf to make sure we understand the size, scope, and functionality of the smart contract.
- Manual review of code, our team will have a process of reading the code line-by-line with the intention of identifying potential vulnerabilities and security flaws.

2. Testing and automated analysis that includes:

- Testing the smart contract functions with common test cases and scenarios, to ensure that it returns the expected results.

3. Best practices review, the team will review the contract with the aim to improve efficiency, effectiveness, clarifications, maintainability, security, and control within the smart contract.

4. Recommendations to help the project take steps to secure the smart contract.

Used Code from other Frameworks/Smart Contracts (Direct Imports)

Imported Packages

- Context
- IUniswapV2Pair
- IUniswapV2Factory
- IERC20
- IERC20Metadata
- ERC20
- SafeMath
- Ownable
- SafeMathInt
- SafeMathUint
- IUnispwaV2Router01
- IUniswapV2Router02
- REDPILL

Description

Optimization enabled: Yes

Decimal: 18

Symbol: RPILL

Max / Total Supply: 1,000,000,000

Capabilities

Components

Version	Contracts	Libraries	Interfaces	Abstract
1.0	3	3	6	0

Exposed Functions

Version	Public	Private	External	Internal
1.0	19	4	86	24

State Variables

Version	Total	Public
1.0	50	33

Capabilities

Version	Solidity Versions Observed	Experimental Features	Can Receive Funds	Uses Assembly	Has Destroyable Contracts
1.0	v0.8.9		Yes	No	No

Inheritance Graph

REDPILL IUniswapV2Pair IUniswapV2Factory SafeMath SafeMathInt SafeMathUint IUniswapV2Router02

Ownable ERC20 IUniswapV2Router01

Context IERC20Metadata

IERC20
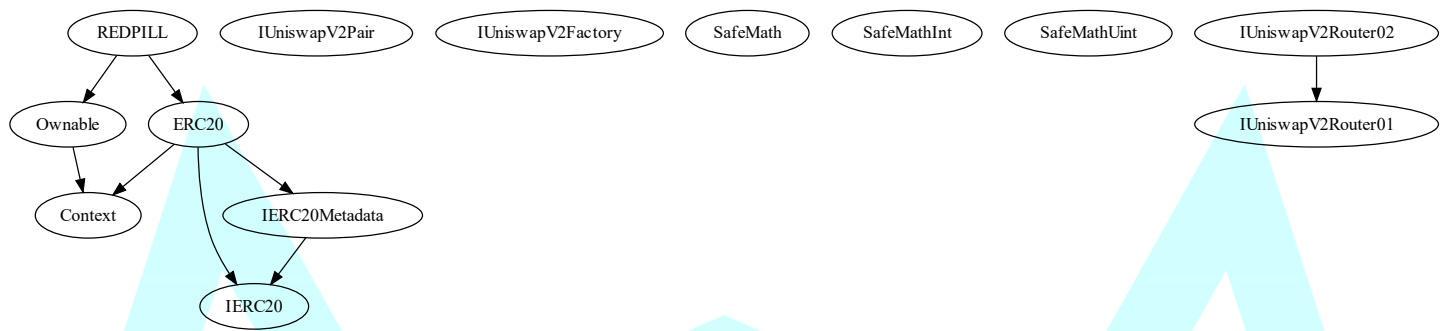
Correct implementation of Token Standard

Tested	Verified
✓	✓

Overall Checkup (Smart Contract Security)

Tested	Verified
✓	✓

Function	Description	Exist	Tested	Verified
TotalSupply	Information about the total coin or token supply	✓	✓	✓
BalanceOf	Details on the account balance from a specified address	✓	✓	✓
Transfer	An action that transfers a specified amount of coin or token to a specified address	✓	✓	✓
TransferFrom	An action that transfers a specified amount of coin or token from a specified address	✓	✓	✓
Approve	Provides permission to withdraw specified number of coin or token from a specified address	✓	✓	✓

Verify Claims

Statement	Exist	Tested	Owner
Renounce Ownership	✓	✓	✓
Mint	✓	✓	✗
Burn	✓	✓	✗
Block	✓	✓	✓
Pause	–	–	–

Legend

Attribute	Symbol
Verified / Can	✓
Verified / Cannot	✗
Unverified / Not checked	🏴
Not Available	–

Write Functions of Contract

1. approve (0x095ea7b3)

2. blacklistAccount (0x2d5a5d34)

3. decreaseAllowance (0xa457c2d7)

4. disableTransferDelay (0xe884f260)

5. enableTrading (0x8a8c523c)

6. excludeFromFees (0xc0246668)

7. excludeFromMaxTransaction (0x7571336a)

8. increaseAllowance (0x39509351)

9. manualBurnLiquidityPairTokens (0xfe72b27a)

10. removeLimits (0x751039fc)

11. renounceOwnership (0x715018a6)

12. resetLimitsBackIntoEffect (0xf5ed2430)

13. setAutoLPBurnSettings (0x730c1888)

14. setAutoLpReceiver (0xa456f9a4)

15. setAutomatedMarketMakerPair (0x9a7a23d6)

16. setEarlySellTax (0xa2657778)

17. setPILLModifier (0x2cbb6cb3)

18. transfer (0xa9059cbb)

19. transferFrom (0x23b872dd)

20. transferOwnership (0xf2fde38b)

21. updateBuyFees (0x8095d564)

22. updateDevWallet (0x1816467f)

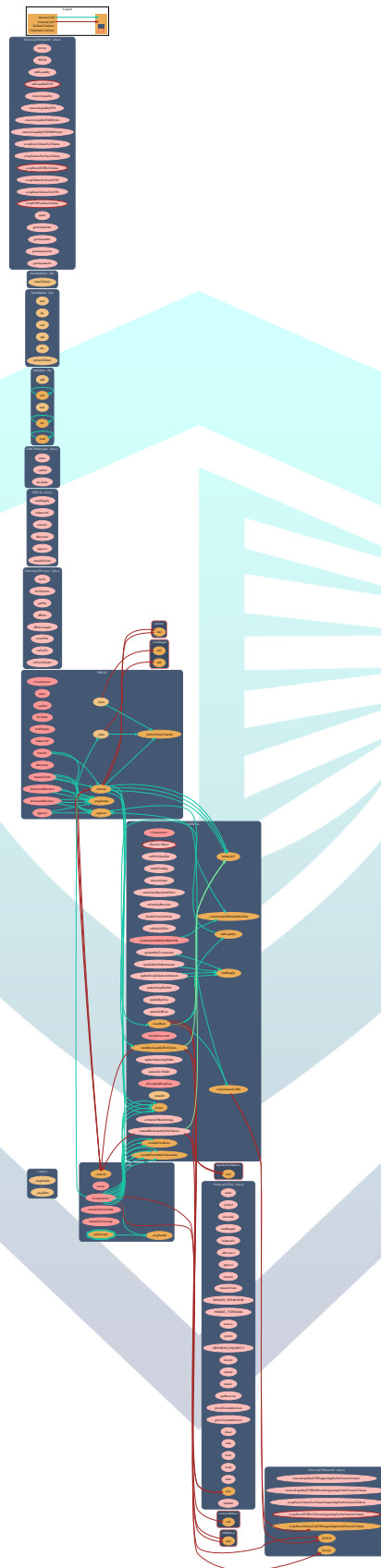23. updateMarketingWallet (0xaacebbe3)

24. updateMaxTxnAmount (0x203e727e)

25. updateMaxWalletAmount (0xc18bc195)

26. updateSellFees (0xff935af6)

27. updateSwapEnabled (0x924de9b7)

28. updateSwapTokensAtAmount (0xd257b34f)

Call Graph

SWC Attacks

ID	Title	Status
SWC-136	Unencrypted Private Data On-Chain	PASSED
SWC-135	Code With No Effects	PASSED
SWC-134	Message call with hardcoded gas amount	PASSED
SWC-133	Hash Collisions with Multiple Variable Length Arguments	PASSED
SWC-132	Unexpected Ether balance	PASSED
SWC-131	Presence of unused variables	PASSED
SWC-130	Right-To Left Override control character (U+202E)	PASSED
SWC-129	Typographical Error	PASSED
SWC-128	DoS With Block Gas Limit	PASSED
SWC-127	Arbitrary Jump with Function Type Variable	PASSED
SWC-126	Insufficient Gas Griefing	PASSED
SWC-125	Incorrect Inheritance Order	PASSED
SWC-124	Write to Arbitrary Storage Location	PASSED
SWC-123	Requirement Violation	PASSED
SWC-122	Lack of Proper Signature Verification	PASSED
SWC-121	Missing Protection against Signature Replay Attacks	PASSED
SWC-120	Weak Sources of Randomness from Chain Attributes	PASSED
SWC-119	Shadowing State Variables	PASSED
SWC-118	Incorrect Constructor Name	PASSED
SWC-117	Signature Malleability	PASSED
SWC-116	Block values as a proxy for time	PASSED
SWC-115	Authorization through tx.origin	LOW ISSUE
SWC-114	Transaction Order Dependence	PASSED
SWC-113	DoS with Failed Call	PASSED
SWC-112	Delegate call to Untrusted Callee	PASSED
SWC-111	Use of Deprecated Solidity Functions	PASSED

SWC-110	Assert Violation	PASSED
SWC-109	Uninitialized Storage Pointer	PASSED
SWC-108	State Variable Default Visibility	LOW ISSUE
SWC-107	Reentrancy	PASSED
SWC-106	Unprotected SELFDESTRUCT Instruction	PASSED
SWC-105	Unprotected Ether Withdrawal	PASSED
SWC-104	Unchecked Call Return Value	PASSED
SWC-103	Floating Pragma	PASSED
SWC-102	Outdated Compiler Version	PASSED
SWC-101	Integer Overflow and Underflow	PASSED
SWC-100	Function Default Visibility	PASSED

AUDIT PASSED

Low Issues

State variable visibility is not set (SWC-108)	L: 916
Use of "tx.origin" as a part of authorization control (SWC-115)	L: 1160, 1161

Function Comments

Description

State variable visibility is not set (SWC-105)

Suggestion:

Variables can be specified as being public, internal, or private. Explicitly define visibility for all state variables.

Description

Use of "tx.origin" as a part of authorization control (SWC-105)

Suggestion:

tx.origin should not be used for authorization. Use msg.sender instead.

Audit Comments

- Owner can renounce ownership
- Owner can transfer ownership
- Owner can block/unblock users
- Owner can enable trading
- Owner can toggle limits in trading
- Owner can change auto liquidity pool receiver address
- Owner can disable trading delay
- Owner can toggle early sell tax
- Owner can update minimum swap token amount between 0.001% and 0.5% of total supply
- Owner can update max transaction amount not lower than 0.1%
- Owner can update max wallet amount not lower than 0.5%
- Owner can exclude/include addresses from max transaction amount
- Owner can toggle swap of tokens
- Owner can update total buy fees not greater than 20%
- Owner can update total sell fees not greater than 25%
- Owner can exclude/include addresses from fees
- Owner can update automated market maker pair address
- Owner can change marketing wallet address
- Owner can change dev wallet address
- Owner can update auto liquidity burn settings
- Owner can manually burn liquidity token with a frequency of 30 minutes and cannot be greater than 10% of tokens in the pool
- Owner cannot mint after initial deployment
- Owner cannot pause contract

CONTRACTWOLF

Blockchain Security - Smart Contract Audits