



**TechRate**  
AUDIT COMPANY

# Smart Contract Security Audit

# Audit Details



Audited project

**TCW Token**



Deployer address

**0xe465bf97175d0d0aaafa249d1535987530f7ef5d**



Client contacts:

**TCW Token team**



Blockchain

**Binance Smart Chain**



Project website:

**<https://www.thecrypto.watch>**

# Disclaimer

This is a limited report on our findings based on our analysis, in accordance with good industry practice as at the date of this report, in relation to cybersecurity vulnerabilities and issues in the framework and algorithms based on smart contracts, the details of which are set out in this report. In order to get a full view of our analysis, it is crucial for you to read the full report. While we have done our best in conducting our analysis and producing this report, it is important to note that you should not rely on this report and cannot claim against us on the basis of what it says or doesn't say, or how we produced it, and it is important for you to conduct your own independent investigations before making any decisions. We go into more detail on this in the below disclaimer below – please make sure to read it in full.

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The analysis of the security is purely based on the smart contracts alone. No applications or operations were reviewed for security. No product code has been reviewed.

# Background

TechRate was commissioned by TCW Token to perform an audit of smart contracts:

<https://bscscan.com/address/0x2478d6c228c75eaf53c60707d0102f7bfe1ae379#code>

The purpose of the audit was to achieve the following:

- Ensure that the smart contract functions as intended.
- Identify potential security issues with the smart contract.

The information in this report should be used to understand the risk exposure of the smart contract, and as a guide to improve the security posture of the smart contract by remediating the issues that were identified.

# Contracts Details

## Token contract details for 29.12.2021

Contract name	TCW Token
Contract address	0x2478d6c228c75EAf53c60707D0102F7bFE1aE379
Total supply	100,000,000,000,000
Token ticker	TCW
Decimals	18
Token holders	395
Transactions count	2,057
Top 100 holders dominance	90.98%
Swap enabled	True
Autoliquidity receiver	0xe465bf97175d0d0aaafa249d1535987530f7ef5d
BNB distributor	0x3c0eec73456ace51a8312a95c6fde1dc9252e110
Marketing fee receiver	0xe465bf97175d0d0aaafa249d1535987530f7ef5d
Contract deployer address	0xe465bf97175d0d0aaafa249d1535987530f7ef5d
Contract's current owner address	0xe465bf97175d0d0aaafa249d1535987530f7ef5d

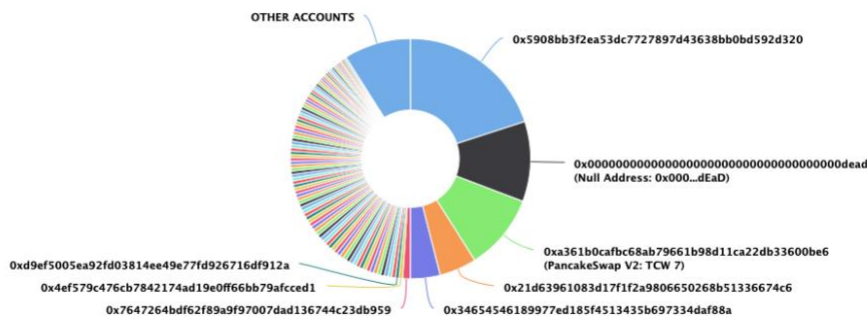
# TCW Token Token Distribution

The top 100 holders collectively own 90.98% (90,982,661,443,948.20 Tokens) of TCW Token

Token Total Supply: 100,000,000,000.00 Token | Total Token Holders: 395

TCW Token Top 100 Token Holders

Source: BscScan.com



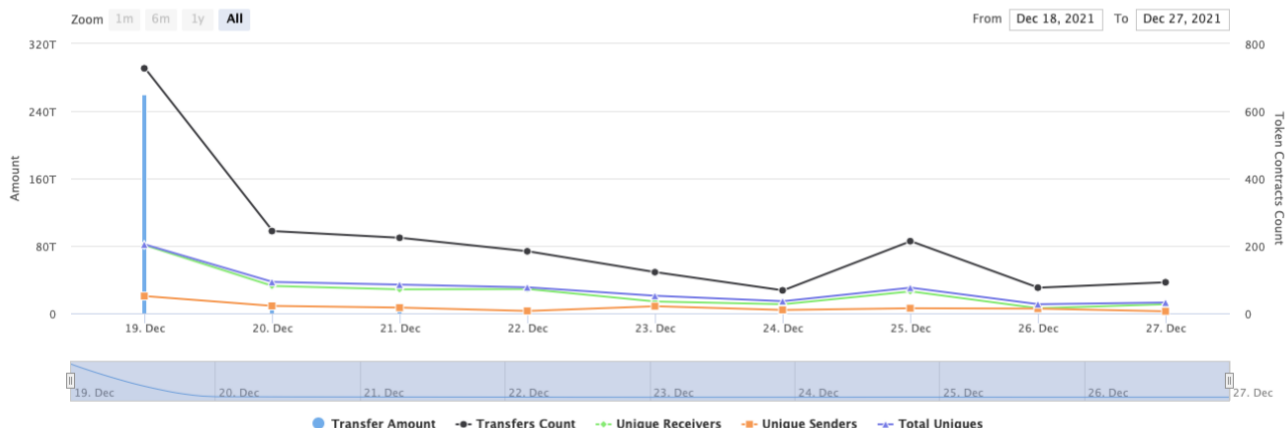
(A total of 90,982,661,443,948.20 tokens held by the top 100 accounts from the total supply of 100,000,000,000.00 token)

## TCW Token Contract Interaction Details

Time Series: Token Contract Overview


Sun 19, Dec 2021 - Mon 27, Dec 2021

Token Contract 0x2478d6c228c75eaf53c60707d0102f7bfe1ae379 (TCW Token)  
Source: BscScan.com





# TCW Token Top 10 Token Holders

Rank	Address	Quantity (Token)	Percentage
1	<a href="#">0x5908bb3f2ea53dc7727897d43638bb0bd592d320</a>	20,000,000,000,000	20.0000%
2	Null Address: 0x000...dEaD	10,773,658,273,256.863934877013051036	10.7737%
3	 <a href="#">PancakeSwap V2: TCW 7</a>	10,256,618,963,567.543500261602164621	10.2566%
4	<a href="#">0x21d63961083d1711f2a9806650268b51336674c6</a>	5,000,000,000,000	5.0000%
5	<a href="#">0x34654546189977ed185f4513435b697334daf88a</a>	4,000,000,000,000	4.0000%
6	<a href="#">0x7647264bdf62f89a9f97007dad136744c23db959</a>	1,000,000,000,000	1.0000%
7	<a href="#">0x4ef579c476cb7842174ad19e0ff66bb79afcced1</a>	499,999,999,999.942865638659593805	0.5000%
8	<a href="#">0xd9ef5005ea92fd03814ee49e77fd926716df912a</a>	499,999,999,999.832	0.5000%
9	<a href="#">0xe76f3e0f6bd08d9dbd37b686f930d247f3693f7f</a>	499,999,926,299.9999999974952036	0.5000%
10	<a href="#">0xc2470256db6af761e3395753b98633dc9e32fe16</a>	499,999,876,498	0.5000%



# Contract functions details

## + [Lib] SafeMath

- [Int] add
- [Int] sub
- [Int] sub
- [Int] mul
- [Int] div
- [Int] div

## + Context

- [Int] \_msgSender
- [Int] \_msgData

## + Ownable (Context)

- [Pub] <Constructor> #
- [Pub] owner
- [Pub] renounceOwnership #
  - modifiers: onlyOwner
- [Pub] transferOwnership #
  - modifiers: onlyOwner
- [Prv] \_setOwner #

## + [Int] IBEP20

- [Ext] totalSupply
- [Ext] decimals
- [Ext] symbol
- [Ext] name
- [Ext] balanceOf
- [Ext] transfer #
- [Ext] allowance
- [Ext] approve #
- [Ext] transferFrom #

## + [Int] IDEXFactory

- [Ext] createPair #

## + [Int] IDEXRouter

- [Ext] factory
- [Ext] WETH
- [Ext] addLiquidity #
- [Ext] addLiquidityETH (\$)
- [Ext] swapExactTokensForTokensSupportingFeeOnTransferTokens #
- [Ext] swapExactETHForTokensSupportingFeeOnTransferTokens (\$)
- [Ext] swapExactTokensForETHSupportingFeeOnTransferTokens #

## + [Int] IDividendDistributor

- [Ext] setShare #
- [Ext] deposit #
- [Ext] claimDividend #

## + BNBDistributor (IDividendDistributor)

- [Pub] <Constructor> #



- [Ext] setShare #
  - modifiers: onlyToken
- [Pub] getWalletShare
- [Ext] deposit #
  - modifiers: onlyToken
- [Int] distributeDividend #
- [Ext] claimDividend #
  - modifiers: onlyToken
- [Ext] setMarketingFeeReceiver #
  - modifiers: onlyToken
- [Ext] setLiquidityFeeReceiver #
  - modifiers: onlyToken
- [Ext] depositExternalBNB #
  - modifiers: onlyToken
- [Prv] \_calculateReward
- [Pub] currentRewards
- [Ext] <Fallback> (\$)

#### + TCW (Context, IBEP20, Ownable)

- [Pub] <Constructor> #
- [Ext] totalSupply
- [Ext] decimals
- [Ext] symbol
- [Ext] name
- [Pub] balanceOf
- [Ext] allowance
- [Prv] \_approve #
- [Pub] approve #
- [Ext] approveMax #
- [Ext] transfer #
- [Ext] transferFrom #
- [Ext] openTrade #
  - modifiers: onlyOwner
- [Int] \_transferFrom #
- [Ext] setSCount #
  - modifiers: onlyOwner
- [Int] \_basicTransfer #
- [Ext] setMaxWalletPercent #
  - modifiers: onlyOwner
- [Int] shouldTakeFee
- [Int] shouldSwapBack
- [Ext] swapAndLiquidify #
  - modifiers: onlyOwner
- [Int] swapBack #
  - modifiers: swapping
- [Ext] BNBbalance
- [Ext] BNBRewardbalance
- [Ext] sendTax #
  - modifiers: onlyOwner
- [Ext] setIsDividendExempt #
  - modifiers: onlyOwner
- [Ext] setIsFeeExempt #
  - modifiers: onlyOwner
- [Ext] setMNF #
  - modifiers: onlyOwner

- [Ext] setFees #
  - modifiers: onlyOwner
- [Ext] setSwapThreshold #
  - modifiers: onlyOwner
- [Ext] setSwapEnabled #
  - modifiers: onlyOwner
- [Ext] setMarketingFeeReceiver #
  - modifiers: onlyOwner
- [Ext] setLiquidityFeeReceiver #
  - modifiers: onlyOwner
- [Ext] getCirculatingSupply
- [Ext] getClaimableBNB
- [Ext] getWalletClaimableBNB
- [Ext] getWalletShareAmount
- [Ext] claim #
- [Ext] depositExternalBNB (\$)
- [Ext] addPair #
  - modifiers: onlyOwner
- [Ext] removeLastPair #
  - modifiers: onlyOwner
- [Ext] setFeesOnNormalTransfers #
  - modifiers: onlyOwner
- [Ext] setisRestricted #
  - modifiers: onlyOwner
- [Ext] setAB #
  - modifiers: onlyOwner
- [Ext] walletIsDividendExempt
- [Ext] walletIsTaxExempt
- [Ext] walletIsRestricted
- [Ext] recoverExcess #
  - modifiers: onlyOwner
- [Ext] withdrawTokens #
  - modifiers: onlyOwner
- [Pub] rescueToken #
  - modifiers: onlyOwner
- [Ext] <Fallback> (\$)

(\$ ) = payable function

# = non-constant function

# Issues Checking Status

Issue description	Checking status
1. Compiler errors.	Passed
2. Race conditions and Reentrancy. Cross-function race conditions.	Passed
3. Possible delays in data delivery.	Passed
4. Oracle calls.	Passed
5. Front running.	Passed
6. Timestamp dependence.	Passed
7. Integer Overflow and Underflow.	Passed
8. DoS with Revert.	Passed
9. DoS with block gas limit.	Low issues
10. Methods execution permissions.	Passed
11. Economy model of the contract.	Passed
12. The impact of the exchange rate on the logic.	Passed
13. Private user data leaks.	Passed
14. Malicious Event log.	Passed
15. Scoping and Declarations.	Passed
16. Uninitialized storage pointers.	Passed
17. Arithmetic accuracy.	Passed
18. Design Logic.	Passed
19. Cross-function race conditions.	Passed
20. Safe Open Zeppelin contracts implementation and usage.	Passed
21. Fallback function security.	Passed

# Security Issues

## ✓ High Severity Issues

No high severity issues found.

## ✓ Medium Severity Issues

No medium severity issues found.

## ✓ Low Severity Issues

### 1. Out of gas

Issue:

- The function `setMNF()` uses the loop to include/exclude addresses from fee. Function will be aborted with `OUT_OF_GAS` exception if there will be a long addresses list.
- The function `setAB()` also uses the loop for restrict addresses. It also could be aborted with `OUT_OF_GAS` exception if there will be a long addresses list.

Recommendation:

Check that the arrays' length is not too big.

## Notes:

- `_transferFrom` function adds tokens amount to sender's balance if it equals to zero.

## Owner privileges (In the period when the owner is not renounced)

- Owner can open trading.
- Owner can change `setCount` value.
- Owner can change max wallet amount.
- Owner can manually swap back.
- Owner can include in and exclude from dividends.
- Owner can include in and exclude from fee.
- Owner can change fees.
- Owner can change `swapThreshold` value.
- Owner can enable / disable swap.
- Owner can change fee receivers.
- Owner can add / remove pair.
- Owner can enable / disable fees on normal transfers.
- Owner can enable / disable restriction for addresses.
- Owner can withdraw contract BNBs.
- Owner can withdraw IBEP20 tokens.

# Conclusion

Smart contracts contain low severity issues! Liquidity pair contract's security is not checked due to out of scope.

Liquidity locking details are provided by the team:

<https://dxsale.app/app/v3/dxlockview?id=0&add=0xe465bF97175D0d0AAAfA249D1535987530F7EF5D&type=lplock&chain=BSC>

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***TechRate note:***

***Please check the disclaimer above and note, the audit makes no statements or warranties on business model, investment attractiveness or code sustainability. The report is provided for the only contract mentioned in the report and does not include any other potential contracts deployed by Owner.***