Cyberscope

# Audit Report

# Pepes Gone Wild

May 2023

| | |
|---|---|
| Network | BSC |
| Address | 0xb1de0971acf50bc3f1230fb923aa8b66ffc79c5e |
| Audited by | © cyberscope |

# Table of Contents

# Review

| | |
|---|---|
| **Contract Name** | PepesGoneWild |
| **Compiler Version** | v0.8.18+commit.87f61d96 |
| **Optimization** | 200 runs |
| **Explorer** | https://bscscan.com/address/0xb1de0971acf50bc3f1230fb923aa8b66ffc79c5e |
| **Address** | 0xb1de0971acf50bc3f1230fb923aa8b66ffc79c5e |
| **Network** | BSC |
| **Symbol** | $PGW |
| **Decimals** | 18 |
| **Total Supply** | 1,000,000,000 |

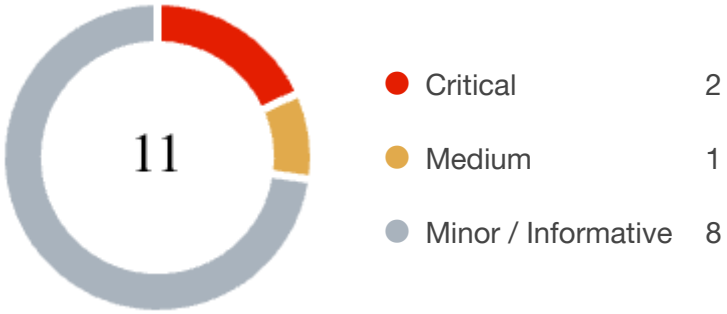
## Audit Updates

| | |
|---|---|
| **Initial Audit** | 19 May 2023 |

## Source Files

| | |
|---|---|
| **Filename** | SHA256 |
| **PepesGoneWild.sol** | 2cf789a89f08a69dcace5f630288ba457e3ee0e1ea29faaec6fd6aa10abd0df5 |

# Findings Breakdown




| Severity | Unresolved | Acknowledged | Resolved | Other |
|---|---|---|---|---|
| Critical | 2 | 0 | 0 | 0 |
| Medium | 1 | 0 | 0 | 0 |
| Minor / Informative | 8 | 0 | 0 | 0 |

# Analysis

Critical Medium Minor / Informative Pass

| Severity | Code | Description | Status |
|---|---|---|---|
| ● | ST | Stops Transactions | Unresolved |
| ● | OCTD | Transfers Contract's Tokens | Passed |
| ● | OTUT | Transfers User's Tokens | Passed |
| ● | ELFM | Exceeds Fees Limit | Unresolved |
| ● | ULTW | Transfers Liquidity to Team Wallet | Passed |
| ● | MT | Mints Tokens | Passed |
| ● | BT | Burns Tokens | Passed |
| ● | BC | Blacklists Addresses | Unresolved |

## ST - Stops Transactions

| | |
|---|---|
| **Criticality** | Critical |
| **Location** | PepesGoneWild.sol#L708 |
| **Status** | Unresolved |

### Description

The contract owner has the authority to stop the sales for all users excluding the owner. The owner may take advantage of it by setting the `sell_Fee` to a high value. As a result, the contract may operate as a honeypot.

```
} else if (to == PancakeswapV2Pair){
    fee = sell_Fee;
}
```

Additionally, the contract owner can universally stop the trades by disabling the `flag` variable.

```
require (flag, "_");
```

### Recommendation

The team should carefully manage the private keys of the owner's account. We strongly recommend a powerful security mechanism that will prevent a single user from accessing the contract admin functions. Some suggestions are:

- Introduce a time-locker mechanism with a reasonable delay.
- Introduce a multi-sign wallet so that many addresses will confirm the action.
- Introduce a governance model where users will vote about the actions.
- Renouncing the ownership will eliminate the threats but it is non-reversible.

## ELFM - Exceeds Fees Limit

| | |
|---|---|
| **Criticality** | Critical |
| **Location** | PepesGoneWild.sol#L785 |
| **Status** | Unresolved |

### Description

The contract owner has the authority to increase over the allowed limit of 25%. The owner may take advantage of it by calling the `setBuyTax` or `setSellTax` function with a high percentage value.

```
function setBuyTax (uint8 _newBuyTax) external onlyOwner {
    buy_Fee = _newBuyTax;
}

function setSellTax (uint8 _newSellTax) external onlyOwner {
    sell_Fee = _newSellTax;
}
```

### Recommendation

The contract could embody a check for the maximum acceptable value. The team should carefully manage the private keys of the owner's account. We strongly recommend a powerful security mechanism that will prevent a single user from accessing the contract admin functions. Some suggestions are:

- Introduce a time-locker mechanism with a reasonable delay.
- Introduce a multi-sign wallet so that many addresses will confirm the action.
- Introduce a governance model where users will vote about the actions.
- Renouncing the ownership will eliminate the threats but it is non-reversible.

## BC - Blacklists Addresses

| | |
|---|---|
| **Criticality** | Medium |
| **Location** | PepesGoneWild.sol#L710 |
| **Status** | Unresolved |

### Description

The contract owner has the authority to stop addresses from transactions. The owner may take advantage of it by calling the `setBlacklist` function.

```
require(!_isBlacklisted[from] && !_isBlacklisted[to], "To or From address is blacklisted.");
```

### Recommendation

The team should carefully manage the private keys of the owner's account. We strongly recommend a powerful security mechanism that will prevent a single user from accessing the contract admin functions. Some suggestions are:

- Introduce a time-locker mechanism with a reasonable delay.
- Introduce a multi-sign wallet so that many addresses will confirm the action.
- Introduce a governance model where users will vote about the actions.
- Renouncing the ownership will eliminate the threats but it is non-reversible.

# Diagnostics

Critical Medium Minor / Informative

| Severity | Code | Description | Status |
|---|---|---|---|
| | PTRP | Potential Transfer Revert Propagation | Unresolved |
| | RSML | Redundant SafeMath Library | Unresolved |
| | IDI | Immutable Declaration Improvement | Unresolved |
| | L04 | Conformance to Solidity Naming Conventions | Unresolved |
| | L07 | Missing Events Arithmetic | Unresolved |
| | L09 | Dead Code Elimination | Unresolved |
| | L16 | Validate Variable Setters | Unresolved |
| | L19 | Stable Compiler Version | Unresolved |

# PTRP - Potential Transfer Revert Propagation

| | |
|---|---|
| **Criticality** | Minor / Informative |
| **Location** | PepesGoneWild.sol#L761 |
| **Status** | Unresolved |

## Description

The contract sends funds to a `marketingWallet` as part of the transfer flow. This address can either be a wallet address or a contract. If the address belongs to a contract then it may revert from incoming payment. As a result, the error will propagate to the token's contract and revert the transfer.

```
payable(marketingWallet).transfer(ethBalance);
```

## Recommendation

The contract should tolerate the potential revert from the underlying contracts when the interaction is part of the main transfer flow. This could be achieved by not allowing set contract addresses or by sending the funds in a non-revertable way.

## RSML - Redundant SafeMath Library

| | |
|---|---|
| **Criticality** | Minor / Informative |
| **Location** | PepesGoneWild.sol |
| **Status** | Unresolved |

### Description

SafeMath is a popular Solidity library that provides a set of functions for performing common arithmetic operations in a way that is resistant to integer overflows and underflows.

Starting with Solidity versions that are greater than or equal to 0.8.0, the arithmetic operations revert to underflow and overflow. As a result, the native functionality of the Solidity operations replaces the SafeMath library. Hence, the usage of the SafeMath library adds complexity, overhead and increases gas consumption unnecessarily.

```
library SafeMath {...}
```

### Recommendation

The team is advised to remove the SafeMath library. Since the version of the contract is greater than `0.8.0` then the pure Solidity arithmetic operations produce the same result.

If the previous functionality is required, then the contract could exploit the `unchecked { ... }` statement.

Read more about the breaking change on https://docs.soliditylang.org/en/v0.8.16/080-breaking-changes.html#solidity-v0-8-0-breaking-changes.

## IDI - Immutable Declaration Improvement

| | |
|---|---|
| **Criticality** | Minor / Informative |
| **Location** | PepesGoneWild.sol#L692,693 |
| **Status** | Unresolved |

### Description

The contract is using variables that initialize them only in the constructor. The other functions are not mutating the variables. These variables are not defined as `immutable`.

```
PancakeswapV2Router
PancakeswapV2Pair
```

### Recommendation

By declaring a variable as immutable, the Solidity compiler is able to make certain optimizations. This can reduce the amount of storage and computation required by the contract, and make it more gas-efficient.

## L04 - Conformance to Solidity Naming Conventions

| | |
|---|---|
| **Criticality** | Minor / Informative |
| **Location** | PepesGoneWild.sol#L113,114,131,167,672,673,677,678,681,765,771,777,781,785,789 |
| **Status** | Unresolved |

### Description

The Solidity style guide is a set of guidelines for writing clean and consistent Solidity code. Adhering to a style guide can help improve the readability and maintainability of the Solidity code, making it easier for others to understand and work with.

The followings are a few key points from the Solidity style guide:

1. Use camelCase for function and variable names, with the first letter in lowercase (e.g., myVariable, updateCounter).
2. Use PascalCase for contract, struct, and enum names, with the first letter in uppercase (e.g., MyContract, UserStruct, ErrorEnum).
3. Use uppercase for constant variables and enums (e.g., MAX_VALUE, ERROR_CODE).
4. Use indentation to improve readability and structure.
5. Use spaces between operators and after commas.
6. Use comments to explain the purpose and behavior of the code.
7. Keep lines short (around 120 characters) to improve readability.

```
function feeToSetter() external view returns (address);

function getPair(address tokenA, address tokenB) external v

ed,
        uint amountBDesired,
...


akeswapV2Pair &&
            from != owner() &&

      to != owner()
        ) {

...
```

## Recommendation

By following the Solidity naming convention guidelines, the codebase increased the readability, maintainability, and makes it easier to work with.
Find more information on the Solidity documentation
https://docs.soliditylang.org/en/v0.8.17/style-guide.html#naming-convention.

## L07 - Missing Events Arithmetic

| | |
|---|---|
| **Criticality** | Minor / Informative |
| **Location** | PepesGoneWild.sol#L782,786 |
| **Status** | Unresolved |

### Description

Events are a way to record and log information about changes or actions that occur within a contract. They are often used to notify external parties or clients about events that have occurred within the contract, such as the transfer of tokens or the completion of a task.

It's important to carefully design and implement the events in a contract, and to ensure that all required events are included. It's also a good idea to test the contract to ensure that all events are being properly triggered and logged.

### Recommendation

By including all required events in the contract and thoroughly testing the contract's functionality, the contract ensures that it performs as intended and does not have any missing events that could cause issues with its arithmetic.

## L09 - Dead Code Elimination

| | |
|---|---|
| **Criticality** | Minor / Informative |
| **Location** | PepesGoneWild.sol#L613 |
| **Status** | Unresolved |

### Description

In Solidity, dead code is code that is written in the contract, but is never executed or reached during normal contract execution. Dead code can occur for a variety of reasons, such as:

- Conditional statements that are always false.
- Functions that are never called.
- Unreachable code (e.g., code that follows a return statement).

Dead code can make a contract more difficult to understand and maintain, and can also increase the size of the contract and the cost of deploying and interacting with it.

```
sing Hooks].
     */
    function _beforeTokenTransfer(
        address from,
        address to,
        uint256 amount
...
    using SafeMath for uint256;

    IPancakeswapV2Router02 public PancakeswapV2Router;
    address public  PancakeswapV2Pair;
    bool    private swapping;

    address public   marketingWallet    = 0x0CD42C8
```

### Recommendation

To avoid creating dead code, it's important to carefully consider the logic and flow of the contract and to remove any code that is not needed or that is never executed. This can help improve the clarity and efficiency of the contract.

## L16 - Validate Variable Setters

| | |
|---|---|
| **Criticality** | Minor / Informative |
| **Location** | PepesGoneWild.sol#L767 |
| **Status** | Unresolved |

### Description

The contract performs operations on variables that have been configured on user-supplied input. These variables are missing of proper check for the case where a value is zero. This can lead to problems when the contract is executed, as certain actions may not be properly handled when the value is zero.

### Recommendation

By adding the proper check, the contract will not allow the variables to be configured with zero value. This will ensure that the contract can handle all possible input values and avoid unexpected behavior or errors. Hence, it can help to prevent the contract from being exploited or operating unexpectedly.

## L19 - Stable Compiler Version

| | |
|---|---|
| **Criticality** | Minor / Informative |
| **Location** | PepesGoneWild.sol#L23 |
| **Status** | Unresolved |

### Description

The `^` symbol indicates that any version of Solidity that is compatible with the specified version (i.e., any version that is a higher minor or patch version) can be used to compile the contract. The version lock is a mechanism that allows the author to specify a minimum version of the Solidity compiler that must be used to compile the contract code. This is useful because it ensures that the contract will be compiled using a version of the compiler that is known to be compatible with the code.

```
msgSender();
        _
```

### Recommendation

The team is advised to lock the pragma to ensure the stability of the codebase. The locked pragma version ensures that the contract will not be deployed with an unexpected version. An unexpected version may produce vulnerabilities and undiscovered bugs. The compiler should be configured to the lowest version that provides all the required functionality for the codebase. As a result, the project will be compiled in a well-tested LTS (Long Term Support) environment.

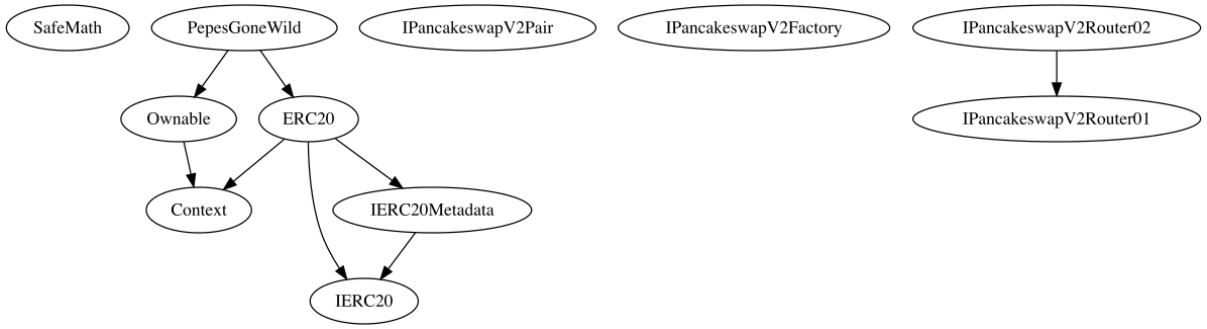
# Functions Analysis

| Contract | Type | Bases | | |
|---|---|---|---|---|
| | **Function Name** | **Visibility** | **Mutability** | **Modifiers** |
| | | | | |
| **SafeMath** | Library | | | |
| | add | Internal | | |
| | sub | Internal | | |
| | sub | Internal | | |
| | mul | Internal | | |
| | div | Internal | | |
| | div | Internal | | |
| | mod | Internal | | |
| | mod | Internal | | |
| | | | | |
| **Context** | Implementation | | | |
| | _msgSender | Internal | | |
| | | | | |
| **Ownable** | Implementation | Context | | |
| | | Public | ✓ | - |
| | owner | Public | | - |
| | renounceOwnership | Public | ✓ | onlyOwner |
| | transferOwnership | Public | ✓ | onlyOwner |
| | | | | |

| | | | | |
|---|---|---|---|---|
| **ERC20** | Implementation | Context, IERC20, IERC20Metadata | | |
| | | Public | ✓ | - |
| | name | Public | | - |
| | symbol | Public | | - |
| | decimals | Public | | - |
| | totalSupply | Public | | - |
| | balanceOf | Public | | - |
| | transfer | Public | ✓ | - |
| | allowance | Public | | - |
| | approve | Public | ✓ | - |
| | transferFrom | Public | ✓ | - |
| | increaseAllowance | Public | ✓ | - |
| | decreaseAllowance | Public | ✓ | - |
| | _transfer | Internal | ✓ | |
| | _mint | Internal | ✓ | |
| | _burn | Internal | ✓ | |
| | _approve | Internal | ✓ | |
| | _beforeTokenTransfer | Internal | ✓ | |
| | | | | |
| **PepesGoneWild** | Implementation | ERC20, Ownable | | |
| | | Public | ✓ | ERC20 |

| | | | | |
|---|---|---|---|---|
| | | External | Payable | - |
| | _transfer | Internal | ✓ | |
| | swapTokensForEth | Private | ✓ | |
| | swapAndSendDividends | Private | ✓ | |
| | setBlacklist | External | ✓ | onlyOwner |
| | setmarketingWallet | External | ✓ | onlyOwner |
| | changeOwner | External | ✓ | onlyOwner |
| | setExcludeWallet | External | ✓ | onlyOwner |
| | setBuyTax | External | ✓ | onlyOwner |
| | setSellTax | External | ✓ | onlyOwner |
| | start | External | ✓ | onlyOwner |

# Inheritance Graph



# Flow Graph

# Summary

Pepes Gone Wild contract implements a token mechanism. This audit investigates security issues, business logic concerns and potential improvements. There are some functions that can be abused by the owner like stop transactions, manipulate the fees and blacklist addresses. The contract can be converted into a honeypot and prevent users from selling if the owner abuses the admin functions. A multi-wallet signing pattern will provide security against potential hacks. Temporarily locking the contract or renouncing ownership will eliminate all the contract threats.

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Cyberscope is one of the leading smart contract audit firms in the crypto space and has built a high-profile network of clients and partners.

**The Cyberscope team**

https://www.cyberscope.io