QuillAudits

AUDIT REPORT

August 2025

For

GLOBAL PARK DAO

Table of Content

Executive Summary

Project Name	Global Park DAO
Protocol Type	Vesting
Project URL	https://www.globalpark.io/
Overview	GParkToken is an ERC20 governance token for Global Park DAO with a fixed supply of 21 million tokens, featuring voting capabilities through ERC20Votes and gasless transactions via ERC20Permit. Key Strengths: • DAO-driven governance with ERC20Votes for transparent decision-making. • Gasless transactions via ERC20Permit (EIP-2612), improving user experience. • Treasury-managed vesting to align long-term contributor incentives. • Based on audited OpenZeppelin modules, ensuring security and interoperability. • Community engagement features like transferWithNote and on-chain project description.
Audit Scope	The scope of this Audit was to analyze the GParkToken.sol Smart Contracts for quality, security, and correctness.
Source Code link	https://etherscan.io/token/0x470aab2a10f3b0757df977c39dde3475f76f81b9?a=0x06abf92e99151e2a6122c199878c491a3a487544#code
Contracts in Scope	GParkToken.sol
Language	Solidity
Blockchain	Base
Method	Manual Analysis, Functional Testing, Automated Testing
Review 1	14th August 2025 - 18th August 2025

Updated Code Received	18th August 2025
Review 2	18th August 2025 - 19th August 2025

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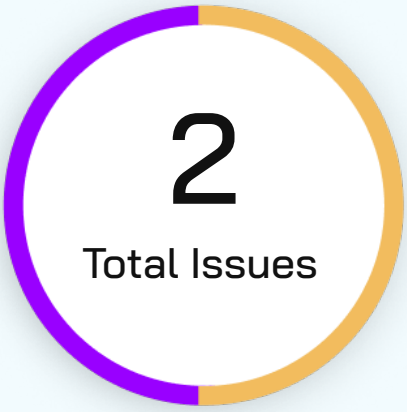
https://www.quillaudits.com/leaderboard/globalpark-dao

Number of Issues per Severity



Critical	0 (0.0%)
High	0 (0.0%)
Medium	0 (0.0%)
Low	1 (50.0%)
Informational	1 (50.0%)

Severity

Issues	Critical	High	Medium	Low	Informational
Open	0	0	0	0	0
Acknowledged	0	0	0	1	1
Partially Resolved	0	0	0	0	0
Resolved	0	0	0	0	0

Summary of Issues

Issue No.	Issue Title	Severity	Status
1	Use ownable2Step	Low	Acknowledged
2	Floating pragma	Informational	Acknowledged

Checked Vulnerabilities

- Access Management
- Arbitrary write to storage
- Centralization of control
- Ether theft
- Improper or missing events
- Logical issues and flaws
- Arithmetic Computations Correctness
- Race conditions/front running
- SWC Registry
- Re-entrancy
- Timestamp Dependence
- Gas Limit and Loops
- Exception Disorder
- Gasless Send
- Use of tx.origin
- Malicious libraries
- Compiler version not fixed
- Address hardcoded
- Divide before multiply
- Integer overflow/underflow
- ERC's conformance
- Dangerous strict equalities
- Tautology or contradiction
- Return values of low-level calls

- Missing Zero Address Validation
- Private modifier
- Revert/require functions
- Multiple Sends
- Using suicide
- Using delegatecall
- Upgradeable safety
- Using throw
- Using inline assembly
- Style guide violation
- Unsafe type inference
- Implicit visibility level

Techniques and Methods

Throughout the audit of smart contracts, care was taken to ensure:

- The overall quality of code
- Use of best practices
- Code documentation and comments, match logic and expected behavior
- Token distribution and calculations are as per the intended behavior mentioned in the whitepaper
- Implementation of ERC standards
- Efficient use of gas
- Code is safe from re-entrancy and other vulnerabilities

The following techniques, methods, and tools were used to review all the smart contracts:

Structural Analysis

In this step, we have analyzed the design patterns and structure of smart contracts. A thorough check was done to ensure the smart contract is structured in a way that will not result in future problems.

Static Analysis

A static Analysis of Smart Contracts was done to identify contract vulnerabilities. In this step, a series of automated tools are used to test the security of smart contracts.

Code Review / Manual Analysis

Manual Analysis or review of code was done to identify new vulnerabilities or verify the vulnerabilities found during the static analysis. Contracts were completely manually analyzed, their logic was checked and compared with the one described in the whitepaper. Besides, the results of the automated analysis were manually verified.

Gas Consumption

In this step, we have checked the behavior of smart contracts in production. Checks were done to know how much gas gets consumed and the possibilities of optimization of code to reduce gas consumption.

Tools and Platforms Used for Audit

Remix IDE, Foundry, Solhint, Mythril, Slither, Solidity Static Analysis.

Types of Severity

Every issue in this report has been assigned to a severity level. There are five levels of severity, and each of them has been explained below.

Critical: Immediate and Catastrophic Impact

Critical issues are the ones that an attacker could exploit with relative ease, potentially leading to an immediate and complete loss of user funds, a total takeover of the protocol's functionality, or other catastrophic failures. Critical vulnerabilities are non-negotiable; they absolutely must be fixed.

High (H): Significant Risk of Major Loss or Compromise

High-severity issues represent serious weaknesses that could result in significant financial losses for users, major malfunctions within the protocol, or substantial compromise of its intended operations. While exploiting these vulnerabilities might require specific conditions to be met or a moderate level of technical skill, the potential damage is considerable. These findings are critical and should be addressed and resolved thoroughly before the contract is put into the Mainnet.

Medium (M): Potential for Moderate Harm Under Specific Circumstances

Medium-severity bugs are loopholes in the protocol that could lead to moderate financial losses or partial disruptions of the protocol's intended behavior. However, exploiting these vulnerabilities typically requires more specific and less common conditions to occur, and the overall impact is generally lower compared to high or critical issues. While not as immediately threatening, it's still highly recommended to address these findings to enhance the contract's robustness and prevent potential problems down the line.

Low (L): Minor Imperfections with Limited Repercussions

Low-severity issues are essentially minor imperfections in the smart contract that have a limited impact on user funds or the core functionality of the protocol. Exploiting these would usually require very specific and unlikely scenarios and would yield minimal gain for an attacker. While these findings don't pose an immediate threat, addressing them when feasible can contribute to a more polished and well-maintained codebase.

Informational (I): Opportunities for Improvement, Not Immediate Risks

Informational findings aren't security vulnerabilities in the traditional sense. Instead, they highlight areas related to the clarity and efficiency of the code, gas optimization, the quality of documentation, or adherence to best development practices. These findings don't represent any immediate risk to the security or functionality of the contract but offer valuable insights for improving its overall quality and maintainability. Addressing these is optional but often beneficial for long-term health and clarity.

Types of Issues

Open

Security vulnerabilities identified that must be resolved and are currently unresolved.

Resolved

These are the issues identified in the initial audit and have been successfully fixed.

Acknowledged

Vulnerabilities which have been acknowledged but are yet to be resolved.

Partially Resolved

Considerable efforts have been invested to reduce the risk/impact of the security issue, but are not completely resolved.

Severity Matrix

Impact

Likelihood	High	Medium	Low
High	Critical	High	Medium
Medium	High	Medium	Low
Low	Medium	Low	Low

Impact

- **High** - leads to a significant material loss of assets in the protocol or significantly harms a group of users.
- **Medium** - only a small amount of funds can be lost (such as leakage of value) or a core functionality of the protocol is affected.
- **Low** - can lead to any kind of unexpected behavior with some of the protocol's functionalities that's not so critical.

Likelihood

- High - attack path is possible with reasonable assumptions that mimic on-chain conditions, and the cost of the attack is relatively low compared to the amount of funds that can be stolen or lost.
- Medium - only a conditionally incentivized attack vector, but still relatively likely.
- Low - has too many or too unlikely assumptions or requires a significant stake by the attacker with little or no incentive.

Low Severity Issues

Use ownable2Step

Acknowledged

Path

GParkToken.sol

Description

The contract uses regular Ownable but the audit comment indicates it should use **`Ownable2Step`**.

- Regular **`Ownable`** allows ownership transfer in a single transaction
- If wrong address is used in **`transferOwnership()`**, ownership is permanently lost
- **`Ownable2Step`** requires the new owner to accept ownership, preventing accidental transfers

Recommendation

```
import "@openzeppelin/contracts/access/Ownable2Step.sol";

contract GParkToken is ERC20, ERC20Permit, ERC20Votes, Ownable2Step {
    constructor(address _daoSafe)
        ERC20("GParkToken", "GPARK")
        ERC20Permit("GParkToken")
        Ownable2Step(_daoSafe)  // Use 2Step version
    {
        // ...
    }
}
```

Global Park Dao Team's Comment

We do not plan to change the contract owner. The ownership transfer function was intentionally left in the contract only to allow a future DAO decision if required.

- If such a case arises, the process will be:

  (i) Snapshot vote where the DAO community approves the change and the new owner address,
  (ii) execution of the transfer through the multisig account.

- Therefore, the risk of a one-step transfer is mitigated by DAO governance and multisig execution.

Informational Issues

Floating pragma

Acknowledged

Path

GParkToken.sol

Description

The contract is using version **^0.8.30** with a floating pragma instead of locking to a specific version. Floating pragmas allow the contract to be compiled with any version greater than or equal to the specified version for that major version. If the contract wasn't thoroughly tested with that version, this can introduce possible bugs.

Recommendation

Consider using a fixed solidity version

Functional Tests

Some of the tests performed are mentioned below and all of them are passing

- lockVesting function can set all the appropriate parameters
- Vesting calculations have been done as expected.
- Deployer receives initial supply → Deployer balance = totalSupply().
- Transfer updates balances correctly
  (e.g., Alice → Bob reduces Alice's balance, increases Bob's balance).
- Transfer fails with insufficient balance
  (transfer() reverts when sender balance < amount).
- Transfer emits Transfer event
  (event Transfer(from, to, value) is emitted correctly).
- Approve sets allowance → approve(spender, amount) updates allowance(owner, spender).
- TransferFrom decreases allowance → After transferFrom(owner, spender, amount), allowance decreases.
- TransferFrom moves tokens → Balances update correctly.
- Zero transfer works → transfer(0) succeeds with no balance change.
- Zero address transfer reverts → transfer(0x0, amount) should revert.
- Approve from zero address reverts → Approval from 0x0 is not allowed.
- Burn (if implemented) reduces supply & emits event (if burn function exists).
- Only owner can call owner-only functions (like mint, pause, etc., if implemented).
- Ownership transfer works.

Automated Tests

No major issues were found. Some false positive errors were reported by the tools. All the other issues have been categorized above according to their level of severity.

Threat Model

Function	Threats
lockVesting(address to, uint256 amount, ...)	Vesting not funded (daoSafe may not retain enough balance → DoS in future claims). • Single-vesting constraint (v.total == 0) prevents top-ups, leading to UX/operability issues. • Privilege abuse: owner can assign arbitrary vestings (self-drain). • Interval/Duration misconfigurations (e.g., vestingDuration % interval != 0) → rounding surprises.
claimVested()	• Treasury depletion risk (daoSafe doesn't hold enough tokens). • Possible DoS if daoSafe spends tokens elsewhere. • Timestamp manipulation (miners shift by seconds). • Vesting rounding may leave "dust" until final claim.
getVestingStatus(address user)	• Data correctness risk if _calculateUnlocked logic is misaligned with expectations. • Possible misleading UX from rounding effects.
transferWithNote(address to, uint256 amount, string calldata note)	• Griefing via large unbounded note strings → inflated event logs, off-chain indexer/storage bloat. • Potential reputational/operational risk (spam in logs). • Possible misleading UX from rounding effects.
claimVested()	• Rounding errors due to integer division. • If interval > vestingDuration, vesting may never unlock.

Closing Summary

In this report, we have considered the security of GlobalPark DAO. We performed our audit according to the procedure described above.

The GParkToken contract, which extends OpenZeppelin's audited ERC20, ERC20Permit, and ERC20Votes modules, demonstrates a robust security posture. Our review found the contract to be well-structured, aligned with established standards, and free from critical vulnerabilities.

- **Critical / High Findings:** None were identified. The core token logic, supply initialization, and governance extensions behave as expected.
- **Inheritance:** The overrides of _update and nonces follow OpenZeppelin's recommended patterns and maintain correctness in voting power and permit replay protection.
- **Time-based logic:** Vesting relies on block.timestamp, which is industry standard and safe within Ethereum's manipulation bounds.

Issues of low and Informational severity were found. GlobalPark DAO Team acknowledged the mentioned issues

Disclaimer

At QuillAudits, we have spent years helping projects strengthen their smart contract security. However, security is not a one-time event—threats evolve, and so do attack vectors. Our audit provides a security assessment based on the best industry practices at the time of review, identifying known vulnerabilities in the received smart contract source code.

This report does not serve as a security guarantee, investment advice, or an endorsement of any platform. It reflects our findings based on the provided code at the time of analysis and may no longer be relevant after any modifications. The presence of an audit does not imply that the contract is free of vulnerabilities or fully secure.

While we have conducted a thorough review, security is an ongoing process. We strongly recommend multiple independent audits, continuous monitoring, and a public bug bounty program to enhance resilience against emerging threats.

Stay proactive. Stay secure.

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