



METATRUST

Draft  
Security Assessment for  
**57-2021-11-  
badgerzaps (1New-  
FLP)**

July 23, 2023






## Executive Summary

Overview			
Project Name	57-2021-11-badgerzaps (1New-FLP)		
Codebase URL	https://github.com/yixiao5428/57-2021-11-badgerzaps		
Scan Engine	AI Analyzer		
Scan Time	2023/07/23 22:50:45		
Commit Id	e105063		

Total			
Critical Issues	0	Critical Issues	The issue can cause large economic losses, large-scale data disorder, loss of control of authority management, failure of key functions, or indirectly affect the correct operation of other smart contracts interacting with it.
High risk Issues	3	High Risk Issues	The issue puts a large number of users' sensitive information at risk or is reasonably likely to lead to catastrophic impacts on clients' reputations or serious financial implications for clients and users.
Medium risk Issues	0	Medium Risk Issues	The issue puts a subset of users' sensitive information at risk, would be detrimental to the client's reputation if exploited, or is reasonably likely to lead to moderate financial impact.
Low risk Issues	0	Low Risk Issues	The risk is relatively small and could not be exploited on a recurring basis, or is a risk that the client has indicated is low-impact in view of the client's business circumstances.
Informational Issues	0	Informational Issue	The issue does not pose an immediate risk but is relevant to security best practices or Defence in Depth.



	Critical Issues	0%	0
	High risk Issues	100%	3
	Medium risk Issues	0%	0
	Low risk Issues	0%	0
	Informational Issues	0%	0

## Summary of Findings

MetaScan security assessment was performed on **July 23, 2023 22:50:45** on project **57-2021-11-badgerzaps (1New-FLP)** with the repository **<https://github.com/yixiao5428/57-2021-11-badgerzaps>** on branch **default branch**. The assessment was carried out by scanning the project's codebase using the scan engine **AI Analyzer**. There are in total **3** vulnerabilities / security risks discovered during the scanning session, among which **0** critical vulnerabilities, **3** high risk vulnerabilities, **0** medium risk vulnerabilities, **0** low risk vulnerabilities, **0** informational issues.

ID	Description	Severity
MSA-001	MWE-200: Insecure LP Token Value Calculation	High risk
MSA-002	MWE-200: Insecure LP Token Value Calculation	High risk
MSA-003	MWE-200: Insecure LP Token Value Calculation	High risk


## Findings

### Critical (0)

No Critical vulnerabilities found here

### High risk (3)

#### 1. MWE-200: Insecure LP Token Value Calculation

 High risk Security Analyzer

Liquidity token value/price can be manipulated to cause flashloan attacks.

##### File(s) Affected

ibbtc/contracts/Zap.sol #208-212

```
208     function curveLPToIbbtc(uint poolId, uint _lp) public view returns(uint bBTC, uint fee) {
209         Pool memory pool = pools[poolId];
210         uint _sett = _lp.mul(1e18).div(pool.sett.getPricePerFullShare());
211         return settPeak.calcMint(poolId, _sett);
212     }
```



ibbtc/contracts/Zap.sol #177-183

```
177     function calcMintWithRen(uint amount) public view returns(uint poolId, uint idx, uint bBTC, uint fee) {
178         uint _ibbtc;
179         uint _fee;
180
181         // poolId=0, idx=0
182         (bBTC, fee) = curveLPToIbbtc(0, pools[0].deposit.calc_token_amount([amount,0], true));
183     }
```

##### Recommendation

Do not use AMM pool or custom liquidity calculation to caculate LP token value/price.

## 2. MWE-200: Insecure LP Token Value Calculation

 High risk Security Analyzer

Liquidity token value/price can be manipulated to cause flashloan attacks.

### File(s) Affected

ibbtc/contracts/Zap.sol #304-318

```
304     function ibbtcToCurveLP(uint poolId, uint bBtc) public view returns(uint lp, uint fee) {
305         uint sett;
306         uint max;
307         (sett, fee, max) = settPeak.calcRedeem(poolId, bBtc);
308         Pool memory pool = pools[poolId];
309         if (bBtc > max) {
310             return (0, fee);
311         } else {
312             // pesimistically charge 0.5% on the withdrawal.
313             // Actual fee might be lesser if the vault keeps a buffer
314             uint strategyFee = sett.mul(controller.strategies(pool.lpToken).withdrawalFee()).div(10000);
315             lp = sett.sub(strategyFee).mul(pool.sett.getPricePerFullShare()).div(1e18);
316             fee = fee.add(strategyFee);
317         }
318     }
```



ibbtc/contracts/Zap.sol #272-280

```
272     function calcRedeemInRen(uint amount) public view returns(uint poolId, uint idx, uint renAmount, uint lp) {
273         uint _lp;
274         uint _fee;
275         uint _ren;
276
277         // poolId=0, idx=0
278         (_lp, fee) = ibbtcToCurveLP(0, amount);
279         renAmount = pools[0].deposit.calc_withdraw_one_coin(_lp, 0);
280     }
```

### Recommendation

Do not use AMM pool or custom liquidity calculation to calculate LP token value/price.

### 3. MWE-200: Insecure LP Token Value Calculation

 High risk Security Analyzer

Liquidity token value/price can be manipulated to cause flashloan attacks.

#### File(s) Affected

ibbtc/contracts/peaks/BadgerSettPeak.sol #106-121

```
106     function calcRedeem(uint poolId, uint bBtc)
107         override
108         external
109         view
110         returns(uint sett, uint fee, uint max)
111     {
112         CurvePool memory pool = pools[poolId];
113         uint btc;
114         (btc, fee) = core.bBtcToBtc(bBtc);
115         sett = _btcToSett(pool, btc);
116         max = pool.sett.balanceOf(address(this))
117             .mul(pool.sett.getPricePerFullShare())
118             .mul(pool.swap.get_virtual_price())
119             .div(core.pricePerShare())
120             .div(1e18);
121     }
```

#### Recommendation

Do not use AMM pool or custom liquidity calculation to caculate LP token value/price.

#### Medium risk (0)

No Medium risk vulnerabilities found here

#### Low risk (0)

No Low risk vulnerabilities found here

#### Informational (0)

No Informational vulnerabilities found here

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