## Purpose of the Document

Use the Test Plan document to describe the testing approach and overall framework that will drive the testing of the project.

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# 1 Introduction

## 1.1 Purpose

To ensure that the website is functioning as intended and meets the requirements specified for User Authentication, Credit Inventory, Credit Marketplace, Sensor Data Collection, Drone Flight Scheduling, Blockchain Integration, Payment Processing, Notifications, Data Analytics, and Support.

## 1.2 Project Overview

Neptunechain website started as a group of environmentalists that came together to give everyone a chance to participate in water markets directly. It facilitates water quality trading by connecting anyone with one-click offset assets.

The team of Neptunechain is building the road to a productive water market, vibrant and Sustainable ecosystems with a robust, rapid response to the domestic water crisis. We seek Fellow ecology-focused, consumer-coordinated groups to add Texas to the list of accredited Water quality trading states.

# 2 Scope

## 2.1 In-Scope

What is being tested, such as all the functions/features of a specific project/product/solution?

- User Authentication: The website should have a secure login and registration system for farmers to sign in to access their accounts.
- Credit Inventory: The website should allow farmers to view their nutrient pollution credits, including their current balance and transaction history.
- Credit Marketplace: The website should provide a marketplace for buying and selling nutrient pollution credits between farmers and other interested parties.
- Sensor Data Collection: The website should have a system for collecting sensor data from drones, which are used to monitor nutrient levels in the soil and water.
- Drone Flight Scheduling: The website should allow farmers to schedule drone flights to collect sensor data and monitor their crops.
- Blockchain Integration: The website should use Blockchain technology to securely store and verify transactions between buyers and sellers.
- Payment Processing: The website should facilitate secure payment processing for nutrient pollution credit purchases and sales.
- Notifications: The website should send notifications to farmers regarding changes to their credit balance, new credit listings, and scheduled drone flights.
- Data Analytics: The website should have a system for analyzing sensor data to provide insights into nutrient management and water quality.

- Support: The website should provide customer support to help farmers navigate the platform and troubleshoot any issues

# 3 Testing Strategy

## 3.1 Test Objectives

To ensure that the website is functioning as intended and meets the requirements specified for User Authentication, Credit Inventory, Credit Marketplace, Sensor Data Collection, Drone Flight Scheduling, Blockchain Integration, Payment Processing, Notifications, Data Analytics, and Support.

A combination of manual and automated testing will be used to test the website. The testing will be performed in different phases and environments, including development, staging, and production. The following test plan outlines the test cases for each functionality.

## 3.2 Level of Testing

*List the types of testing to be performed*.

| Test Type | Description | Responsible Parties |
|---|---|---|
| **Unit Testing** | It is the first level of testing where individual units or modules of software are tested in isolation from the rest of the system to ensure that they are working as expected. | Developers are primarily responsible for unit testing. |
| **Integration Testing** | It is the second level of testing where individual units or modules are combined and tested as a group to ensure that they are working correctly together. | Developers, Testers, and Integration Specialists are responsible for Integration Testing. |
| **System Testing** | It is the third level of testing where the entire system is tested as a whole to ensure that it meets the specified requirements and works as expected. | Testers, Business Analysts, and Quality Assurance Specialists are responsible for System Testing. |
| **Acceptance Testing** | It is the fourth and final level of testing where the system is tested from the user's perspective to ensure that it | Customers, Product Owners, Business Analysts, and Testers are |

| | | |
|---|---|---|
| | meets the business requirements and is ready for deployment. | responsible for Acceptance Testing. |

### 3.3 TEST CASES

*Specify what features are to be tested.*

| User Authentication: | |
|---|---|
| 1 | Verify that registration is secure and requires a valid email address and password. |
| 2 | Verify that login is secure and requires valid credentials. |
| 3 | Verify that the "forgot password" functionality is working properly. |
| 4 | Verify that users are redirected to the appropriate pages after logging in. |

| Credit Inventory: | |
|---|---|
| 1 | Verify that the farmer's credit balance is correctly displayed. |
| 2 | Verify that the transaction history is correctly displayed. |
| 3 | Verify that the credit inventory is updated after a credit transaction occurs. |
| 4 | Verify that the credit inventory is secure and accessible only to the authorized users. |

| Credit Marketplace: | |
|---|---|
| 1 | Verify that nutrient pollution credits can be listed for sale. |
| 2 | Verify that nutrient pollution credits can be purchased. |
| 3 | Verify that the transaction history is updated after a credit transaction occurs. |
| 4 | Verify that the marketplace is secure and accessible only to the authorized users. |

| Sensor Data Collection: | |
|---|---|
| 1 | Verify that sensor data is collected and stored correctly. |
| 2 | Verify that the data collected is accurate and valid. |
| 3 | Verify that sensor data is accessible only to authorized users. |

| Drone Flight Scheduling: | |
|---|---|
| 1 | Verify that farmers can schedule drone flights. |
| 2 | Verify that the scheduled drone flights are accurately displayed. |
| 3 | Verify that drone flight scheduling is secure and accessible only to the authorized users. |

| Blockchain Integration: | |
|---|---|
| 1 | Verify that transactions are securely stored on the blockchain. |
| 2 | Verify that the blockchain integration is working properly. |
| 3 | Verify that the transactions are secure and accessible only to authorized users. |

| Payment Processing: | |
|---|---|
| 1 | Verify that payments are securely processed. |
| 2 | Verify that payments are correctly applied to the credit balances. |
| 3 | Verify that the payment processing is secure and accessible only to authorized users. |

| Notifications: | |
|---|---|
| 1 | Verify that notifications are sent to farmers when their credit balance changes. |
| 2 | Verify that notifications are sent to farmers when new credit listings are posted. |
| 3 | Verify that notifications are sent to farmers when their drone flights are scheduled. |
| 4 | Verify that notifications are secure and accessible only to the authorized users. |

| Data Analytics: | |
|---|---|
| 1 | Verify that data analytics provide insights into nutrient management and water quality. |
| 2 | Verify that the data analytics are accurate and valid. |
| 3 | Verify that data analytics are secure and accessible only to authorized users. |

| Support: |
|---|

| | |
|---|---|
| 1 | Verify that customer support is available to help farmers navigate the platform. |
| 2 | Verify that customer support is available to troubleshoot any issues. |
| 3 | Verify that the customer support is secure and accessible only to the authorized users. |

**CONCLUSION:**

By following this test plan, we can ensure that the website is functioning as intended and meets the requirements specified for User Authentication, Credit Inventory, Credit Marketplace, Sensor Data Collection, Drone Flight Scheduling, Blockchain Integration, Payment Processing, Notifications, Data Analytics, and Support