Software Engineering Group 11
SE_11_TS
Test Specification

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Configuration Ref:	SE_11_TS
Date:	2014-11-14
Version:	1.0
Status:	Draft

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1. Introduction

1.1. Purpose of Document

The purpose of this document is to provide a comprehensive guide to the tests we will carry out on the website, android and database throughout the build and the complete system at the end of the build.

1.2. Scope

This document aims to be a brief but detailed document listing our test specifications for the website, android and database throughout the build and the complete system at the end of the build.

1.3. Objectives

This document covers:

- The Website Test Specification
- The Database Test Specification
- The Android Test Specification
- The Final System Test Specification

1.4. Documents Included

This Test Specification has been derived from the following documents

- SE.QA.RS – Requirement Specification[1]
- SE_11_PP – Project Plan[2]
- SE_11_TS_01 – Android Test Specification[3]
- SE_11_TS_02 – Database Test Specification[4]
- SE_11_TS_03 – System Test Specification[5]
- SE_11_TS_04 – Website Test Specification[6]

2. Android Test Specification

2.1. Introduction

The Android Test Specification has been created by elo9, als48, qiz and jas78 they derived these tests using the documentation provided by the client, SE.QA.RS and also the groups own Project Plan documentation SE_11_PP. These tests offer a comprehensive test specification of the Android Application and its fields and ability to send data and ensure the UI works as needed.

2.2. Recordings and Species Module testing

Test ref	Req. being tested	Test content	Input	Output	Pass criteria
	FR2	Test a valid phone number for a recorder.	01234564854	Phone number is accepted when sent to the database.	No errors or warnings are produced.
	FR2	Test a phone number that contains characters.	01a23d65845	Phone number is rejected when the user attempts to submit the data.	An error is displayed to the user alerting them that the phone number is invalid due to characters.
	FR2	Test a phone number that contains special characters.	215!254@*90	Phone number is rejected when the user attempts to submit the data.	An error is displayed to the user alerting them that the phone number is invalid due to special characters.
	FR2	Test a valid date.	06/11/2014	The date is accepted and sent to the database.	No warnings or errors are produced.
	FR2	Test a historic date.	06/11/1900	The date is rejected when the user attempts to	An error is displayed to the user alerting them that the date

				submit the data.	is too far in the past.
	FR2	Test a date in the future.	A date further in the future of the current date	The date is rejected when the user attempts to submit the data.	An error is displayed to the user alerting them that the date cannot be in the future.
	FR3	Test a valid species from the list.	Search for a valid species that exists within the database.	The species is accepted when the user submits the data.	No warnings or errors are produced.
	FR3	Search for a species that does not exist.	Search for '$FS465bth'	No results will be returned.	A message will alert the user that no matching results were obtained. A prompt to add a new species will appear.
	FR3	Test a valid unique species can be added.	Attempt to add a new valid species.	The new species will be added to the database when submitted.	No warning or error message will be displayed to the user as the data is valid.
	FR3	Test that a repeat of a species cannot be entered.	Attempt to add a new valid species that already exists in the database.	The new species will not be added to the database.	An error will be displayed to the user alerting them to the fact a duplicate of this species already exists.
	FR4	Test a valid abundance character.	'A'	The character is accepted as valid on submission and sent to the database.	No error message or warning is produced for the valid character.
	FR4	Test an invalid abundance character.	'Z'	The character will be rejected when the	An error is displayed to the user alerting them that the

				user attempts to submit data.	abundance character is invalid.
	FR4	Test multiple characters in the abundance field.	‘FA’	The character will be rejected when the user attempts to submit the data.	An error is displayed to the user alerting them that only one character can be entered into the abundance field.
	FR4	Test no entry in the free text comment area.	Enter no data to the free text area.	On submission the data will be sent to the database.	No warning or error messages will be displayed for the valid entry.
	FR4	Test a valid entry in the free text comment area.	Enter more than 0 and less than 256 characters.	On submission the data will be sent to the database.	No warning or error message will be displayed for the valid entry.
	FR4	Test a comment that is more than the maximum number of valid characters in the free text comment field.	Enter more than 256 characters in the free text comment field.	The data will be rejected when the user attempts to submit the data.	An error message will alert the user to the fact that the free comment box is only able to take a comment of 256 characters or less.
	FR4	Testing the camera is loaded when the scene camera icon is pressed.	Press the scene camera icon.	The screen is switched to camera output.	The user can take a picture with the camera which is then saved.

	FR4	Testing the camera is loaded when the plant camera icon is pressed.	Press the plant camera icon.	The screen is switched to camera output.	The user can take a picture with the camera which is then saved.
	FR5	Testing a recording can be deleted.	Select a recording and press delete.	The recording will no longer be displayed in the list.	The database will no longer contain the recording that was deleted.
	FR5	Test a whole species can be deleted.	Select a pre-existing species and press delete.	The recording will no longer be displayed in the list.	The database will no longer contain the recording that was deleted.
	FR5	Change the abundance of a species.	Select a pre-existing species and change the abundance to a valid abundance.	The species will now be updated with the new abundance.	The database will be updated to match the new information given on submission.
	FR5	Change the abundance of a species to a non-valid abundance.	Select a pre-existing species and change the abundance to a non-valid abundance.	When the user submits the change the change is rejected.	An error message is produced alerting the user that the input for abundance is not valid.
	FR5	Change the typical location for a species.	Select a pre-existing species and change the pre-existing location to a new valid location.	The species record will be updated with the new value for typical location.	No errors or warning messages are produced as the data is valid.
	FR5	Change the image of a species (plant).	Select a pre-existing species and change the plant image to a valid image.	The species plant image will be updated with the new image.	The database will be updated to match the new information

					given on submission.
	FR5	Change the image of a species (scene).	Select a pre-existing species and change the scene input to a valid image.	The species scene image will be updated with the new image.	The database will be updated to match the new information given on submission.

2.3. Functionality

Test ref	Req. being tested	Test content	Input	Output	Pass criteria
	FR3	Search for a certain plant in the database	Enter a plant name that is in the database	A drop down list containing plant searched for	If plant appears in drop down list
	FR3	Search for a plant alphabetically	Enter the first letter or couple of letters	A drop down list populated with plants that match letter(s) going from common to rare	If first letter(s) match those of first letter(s) of plants in drop down list
	FR3	Search for a plant not in the database	Enter a plant name that is not in the database	A drop down list with option to add new plant	If add new plant option appears in drop down
	FR5	Display entries according to date	Test database of entries. Two with same day & month, two with same month & year, two with same day & year and two completely same dates	Display entries going from closest date then progressing back to oldest recorded record	If entries are grouped by year and month
	PR1	GPS is turned off when app is closed/goes	App is closed/goes inactive	Phone GPS is deactivated	If phone settings show GPS is

		inactive (If GPS is only to be active when app is)			off after app use
	FR4	Search for a certain reserve in the database	Enter a reserve name that is in the database	A drop down list containing reserve searched for	If reserve appears in drop down list
	FR4	Search for a reserve alphabetically	Enter the first letter or couple of letters	A drop down list populated with reserves that match letter(s)	If first letter(s) match those of first letter(s) of reserves in drop down list
	FR4	Search for a reserve not in the database	Enter a reserve that is not in the database	A drop down list stating unable to locate reserve	If unable to find reserve appears for the user
	FR4	When a picture is taken that the GPS coordinates are recorded	Take a picture	GPS coordinates are entered into field to be sent	If record contains GPS coordinates
	FR2, FR8, FR9	Test logon id validation with one in user database	Enter e-mail of member on system	Proceed to password validation	Logon id is confirmed to be a user in database
	FR2, FR8, FR9	Test logon id validation with one not in user database	Enter e-mail of a non-member	Display ‘unable to recognize logon/ password’	Logon id is confirmed as not in user database
	FR2, FR8, FR9	Test if correct password is entered	Enter correct password for logon id	Proceed to next screen	Password matches password linked to Logon id

	FR2, FR8, FR9	Test if an incorrect password is detected	Enter incorrect password for logon id	Display ‘unable to recognize logon/ password’	If password is confirmed as not matching password linked to Logon id
	FR2, FR8, FR9	Test access level which is valid	Member’s access level	Proceed to next screen	If access level is recognized as being greater than or equal to required level
	FR2, FR8, FR9	Test access level which is not valid	Member’s access level	Display ‘Access denied’	If access level is recognized as being less than required level
	FR5	Test if any entries are on your phone	Request list of previous entries with no entries	Display ‘Not previous entries currently stored’	If displays message for user as no entries to display
	PR1	Test if user notified they can upload with WiFi connection made (only if that is their upload option)	Phone connects to WiFi while app is active	Upload icon lights up	If Icon changes and setting is for WiFi
	PR1	Test if user notified they can upload with signal at a good strength to ensure transition	Phone signal is at or above a certain strength while app is active	Upload icon lights up	If Icon changes and setting is for using phone’s signal

		(only if that is their upload option)			
	PR1	Test if user notified they can upload with WiFi when no connection is made (only for WiFi upload option)	Phone signal is at or above a certain strength while app is active	Upload icon does not light up	If Icon does not change and setting is for WiFi

2.3 UI

Test Ref	Req. being tested	Test content	Input	Output	Pass criteria
SE-F-045	EIR1	Main Menu - The upload viewers change based on the record state	The record is in the local Database	Button should be red	Has to be red,
SE-F-044	EIR1	Main Menu - The upload viewers change based on the record state	The record is being uploaded	Button should change to orange	Needs to change to orange.
SE-F-045	EIR1	Main Menu - The upload viewers change based on the record state	The record has uploaded, stays for 5 minutes	The button changed to green, and disappears after 5 minutes	Needs to change and disappear in that time provided.
SE-F-046	EIR1	Record screen - Image select screen	Swipe right on the image select	Image swipe option correctly switches	The state is switched.

Test Ref	Req. being tested	Test content	Input	Output	Pass criteria
				between image modes	
SE-F-047	EIR1	Record Screen - Reset button works correctly	The button is pressed	The data entry forms are cleared	They are cleared correctly
SE-F-048	EIR1, PR2	Main menu - Scaling to different screen sizes works correctly	Application is tested on larger screen	The buttons and icons scale correctly and the positions are relative to screen size	The buttons looks correctly scaled.
SE-F-049	EIR1, PR2	Main menu - Scaled to tablet size	Opened on tablet	All controls are scaled up for tablets and works correctly	Application must have all controls scale up appropriately
SE-F-050	EIR1, PR2	Record Screen - Scaled to tablet size	Opened on a tablet	The buttons and image size are scaled correctly	Needs to be scaled correctly without any errors with resolution or position
SE-F-051	EIR1	Main menu - Rotate to landscape	Rotated the device to landscape.	The elements rotate and resize to fit the screen more appropriately	Needs to resize and reposition elements correctly

Test Ref	Req. being tested	Test content	Input	Output	Pass criteria
SE-F-052	EIR1	Record Screen - Rotate to landscape	Rotated the device to landscape.	The elements of the screen rotate and resize to fit the screen, this includes the image selector.	Needs to resize correctly and the image has to resize
SE-F-053	EIR1	Main Menu - four navigation buttons must be in the correct location	Opened the application	The buttons are spaced evenly and are the same size	Have to be spaced evenly and are the same size
SE-F-054	EIR1	Main menu - Upload button checks	Opened the application	The upload buttons are spaced and positioned evenly	They're spaced evenly and are the same size
SE-F-055	EIR1	Main menu - Added recording to upload button	Added a recording to be displayed on the button display	The recording button is added to the end of the stack	Has to be added correctly to the display
SE-F-056	EIR1	Record Screen - GPS Screen disability	Turn off GPS	The GPS automatic entry should be disabled	Has to disable the controls once GPS is turned off

3. Database Test Specification

3.1. Introduction

The Database Specification has been created by kid10, alf33 and tor10 they derived these tests using the documentation provided by the client, SE.QA.RS and also the groups own Project Plan documentation SE_11_PP. These tests offer a comprehensive test specification of the database fields ensuring data can be stored and the tables link correctly.

3.2. Recordings Table

Test Ref	Req being tested	Test Content	Input	Output	Pass Criteria
SE-F-001	FR2,FR8	Check if the database can store a valid reserve_id	A valid reserve id such as 7 or 75 which has a corresponding reserve record	The reserve id is successfully stored in the relevant row	Data is stored correctly without errors or warnings
SE-F-002	FR2,FR8	Check if the database can store an invalid reserve_id	An invalid reserve id such as “reserve 51”	The reserve id is not successfully stored and an error is given	Data is not stored and an error is given
SE-F-003	FR2,FR8	Check if the database can store a valid user_id	A valid user id such as 3 or 22 which has a corresponding user record	The user id is successfully stored in the relevant row	Data is stored correctly without errors or warnings
SE-F-004	FR2,FR8	Check if the database can store an invalid user_id	An invalid user id such as “user 98”	The user id is not successfully stored and an error is given	Data is not stored and an error is given

3.3. Reserves Table

Test ref	Req. being tested	Test content	Input	Output	Pass criteria
SE-F-005	FR7	Check if database can store common reserve name	Name of the nature reserve	The database should store the newly entered reserve	Data is stored correctly without any problems
SE-F-006	FR7	Check if database can store common reserve name past the varchar limit	Enter a name of length greater than 50	The data entry should fail	Data should not appear in the database
SE-F-007	FR8	Enter an OS grid reference that corresponds to the location of the reserve	A grid reference of correct length and format	The database should store the reference	Data is stored correctly without any problems
SE-F-008	FR8	Enter an OS grid reference that corresponds to the location of the reserve	A grid reference of correct length but incorrect format	The data entry should be re-formatted and stored in the database	Data is stored correctly without any problems
SE-F-009	FR8	Enter an OS grid reference that corresponds to the location of the reserve	A grid reference of incorrect length and incorrect format	The data entry should fail	Data is not stored in the database
SE-F-010	FR8	Enter a textual description of the reserve	Text of length greater than 0	The database should store the description	Data is stored correctly without any problems
SE-F-011	FR8	Enter an empty description of the reserve	An empty string	The data entry should fail	Data is not stored in the database

3.4. Species Table

Test Ref	Req being Tested	Test Content	Input	Output	Pass Criteria
SE-F-012	FR7	Check if database can store common name.	Enter the common name of the Species e.g. European Silver-fir	The database should store the newly entered species.	Data is stored correctly without any problems
SE-F-013	FR7	Check if database can store a common name past the varchar (50) limit.	Enter a common name of the species which is beyond the 50 character limit.	The data entered into the database should fail.	Data should not appear in the database
SE-F-014	FR7	Check if database can store Latin name.	Enter the Latin name of the Species e.g. Abies alba Mill	The database should store the newly entered species.	Data is stored correctly without any problems
SE-F-015	FR7	Check if database can store a Latin name past the varchar (100) limit.	Enter a Latin name of the species which is beyond the 100 character limit.	The data entered into the database should fail.	Data should not appear in the database
SE-F-016	FR7	Check if database adds a timestamp every time a new row gets created or updated	Add a new species to the database	A time stamp should be automatically created in the database.	Timestamp should be created with the right time.

3.5. Species Occurrence Table

Test Ref	Req being tested	Test Content	Input	Output	Pass Criteria
SE-F-017	FR7	Check if the database can store a valid species_id	A valid species id such as 2 or 24 which has a corresponding species record	The species id is successfully stored in the relevant row	Data is stored correctly without errors or warnings
SE-F-018	FR7	Check if the database can store an invalid species_id	An invalid species id such as “species 123”	The species id is not successfully stored and an error is given	Data is not stored and an error is given
SE-F-019	FR7	Check if the database can store a valid recording_id	A valid recording id such as 5 or 47 which has a corresponding recording record	The recording id is successfully stored in the relevant row	Data is stored correctly without errors or warnings
SE-F-020	FR7	Check if the database can store an invalid recording_id	An invalid recording id such as “recording 34”	The recording id is not successfully stored and an error is given	Data is not stored and an error is given
SE-F-021	FR7	Check if the database can store a valid longitude	A valid longitude such as 52° 24' 55.0908"	The longitude is successfully stored in the relevant row	Data is stored correctly without errors or warnings
SE-F-022	FR7	Check if the database can store an invalid longitude	An invalid longitude which exceeds the 20 character limit	The longitude stored but is truncated	Data is only partly stored and a warning is given regarding truncation

SE-F-023	FR7	Check if the database can store a valid latitude	A valid latitude such as -4° 4' 58.5114"	The latitude is successfully stored in the relevant row	Data is stored correctly without errors or warnings
SE-F-024	FR7	Check if the database can store an invalid latitude	An invalid latitude which exceeds the 20 character limit	The latitude is stored but is truncated	Data is only partly stored and a warning is given regarding truncation
SE-F-025	FR7	Check if the database can store a valid abundance	A valid abundance which is either ‘D’, ‘A’, ‘F’, ‘O’ or ‘R’	The abundance is successfully stored in the relevant row	Data is stored correctly without errors or warnings
SE-F-026	FR7	Check if the database can store an invalid abundance	An invalid abundance such which is not in the enum such as “lots”	The abundance is not successfully stored and an error is given	Data is not stored and an error is given
SE-F-027	FR7	Check if the database can store a valid comment	A valid comment such as “plenty of this species in this area”	The comment is successfully stored in the relevant row	Data is stored correctly without errors or warnings
SE-F-028	FR7	Check if the database can store an invalid comment	An invalid comment which exceeds the limit of the text type. (***L*** + 2 bytes, where ***L*** < 2^{16}) [1]	The comment is stored but is truncated	Data is only partly stored and a warning is given regarding truncation

SE-F-029	FR7	Check if the database can store a valid general photo	A valid general photo such as “img0029.jpg”	The general photo is successfully stored in the relevant row	Data is stored correctly without errors or warnings
SE-F-030	FR7	Check if the database can store an invalid general photo	An invalid general photo which exceeds the 255 character limit	The general photo is stored but is truncated	Data is only partly stored and a warning is given regarding truncation
SE-F-031	FR7	Check if the database can store a valid specimen photo	An valid specimen photo such as “img0103.jpeg”	The specimen photo is successfully stored in the relevant row	Data is stored correctly without errors or warnings
SE-F-032	FR7	Check if the database can store an invalid specimen photo	An invalid specimen photo which exceeds the 255 character limit	The specimen photo is stored but is truncated	Data is only partly stored and a warning is given regarding truncation

3.6. Users Table

Test Ref	Req being tested	Test Content	Input	Output	Pass Criteria
SE-F-033	FR7	Check if the database can store a valid email	A valid email such as “kid10@aber.ac.uk”	The email is successfully stored in the relevant row	Data is stored correctly without errors or warnings
SE-F-034	FR7	Check if the database can store an invalid email	An invalid email which exceeds the 254 character limit	The email is stored but is truncated	Data is only partly stored and a warning is given regarding truncation
SE-F-035	FR7	Check if the database can store a valid password	A valid password such as an encrypted version of “pass1234”	The password is successfully stored in the relevant row	Data is stored correctly without errors or warnings
SE-F-036	FR7	Check if the database can store an invalid password	An invalid password which exceeds the 255 character limit	The password is stored but is truncated	Data is only partly stored and a warning is given regarding truncation
SE-F-037	FR7	Check if the database can store a valid name	A valid name such as “Joe Bloggs”	The name is successfully stored in the relevant row	Data is stored correctly without errors or warnings
SE-F-038	FR7	Check if the database can store an invalid name	An invalid name which exceeds the 50 character limit	The name is stored but is truncated	Data is only partly stored and a warning is given regarding truncation

SE-F-039	FR7	Check if the database can store a valid phone number	A valid phone number such as 0123456789	The phone number is successfully stored in the relevant row	Data is stored correctly without errors or warnings
SE-F-040	FR7	Check if the database can store an invalid phone number	An invalid phone number which exceeds the 25 character limit	The phone number is stored but is truncated	Data is only partly stored and a warning is given regarding truncation

4. Web Test Specification

4.1. Introduction

The Website Specification has been created by gar18, rhc15, alf33 and tor10 they derived these tests using the documentation provided by the client, SE.QA.RS and also the groups own Project Plan documentation SE_11_PP. These tests offer a comprehensive test specification of the Website fields and pages ensuring data can be entered and pages all link together and the server receives and stores data in the database as needed.

4.2. FR7 – Server Receives Recording

Test ref	Req being tested	Test content	Input	Output	Pass criteria
SE-F-041	FR7	Server receives transmissions of recordings and stores them in the database.	A record is transmitted to the server and stored in the database.	Server receives the input and then stores it in the database correctly.	New recording is in the database.
SE-F-042	FR7	User X is authenticated	User name and password.	User name will display in the ‘You’ page. The server knows the user is in session.	Correct user name is displayed. Correct user data is displayed.
SE-F-043	FR7	User is authorised to access the website.	User name and password.	User is logged into the site.	User X has access to the web app.

4.3. FR8 – Addition and Maintenance of Reserves

SE-F-044	FR8	Create/Update Reserve Name with a valid name	Aber	Name is accepted and saved into the database	Aber is displayed with no errors or warnings
SE-F-045	FR8	Create/Update Reserve Name with numbers	1476	Name is rejected and not saved	An error appears alerting the user that numbers are not allowed
SE-F-046	FR8	Create/Update Reserve Name with 50 characters (Upper Boundary)	Aberystwyth reserve of nature and plants and trees	Name is accepted and saved into the database	Aberystwyth reserve of nature and plants and trees Is displayed with no errors or warnings
SE-F-047	FR8	Create/Update Reserve Name with 50 characters	Aberystwyth reserve of nature plants biology study	Name is rejected and not saved	An error appears alerting the user that they have gone over the character limit
SE-F-048	FR8	Create/Update Reserve Name with 4 characters (Lower Boundary)	Aber	Name is accepted and saved into the database	Aber is displayed with no errors or warnings

SE-F-049	FR8	Create/Update Reserve Name with 3 characters	abe	Name is rejected and not saved	An error appears alerting the user that they have not entered enough characters
SE-F-050	FR8	Delete Reserve	Press Delete	The Reserve Is deleted	The record of the reserve is no longer on the database
SE-F-051	FR8	Check if there are duplicate names or if name is saved	User inputs a name and make sure there are no duplicates.	The name is displayed and stored in the database	Name is displayed without any duplicates
SE-F-052	FR8	Create/Update Reserve Location that is valid	20.534, 50.435	Location is accepted and saved into the database	20.534, 50.435 is displayed with no errors or warnings
SE-F-053	FR8	Create/Update Reserve Location with characters	3kfm , 34jdd	Location is rejected and not saved	An error appears alerting the user that they can't use Alphabetical characters
SE-F-054	FR8	Create/Update Reserve Location with 20 Characters (Upper Boundary)	304.22581, 250.14858	Location is accepted and saved into the database	304.22581, 250.14858 Is displayed with no errors or warnings

SE-F-055	FR8	Create/Update Reserve Location with 21 characters	254.21687, 145.257894	Location is rejected and not saved	An error appears alerting the user that they have gone over the character limit
SE-F-056	FR8	Create/Update Reserve Location with 3 characters (Lower Boundary)	3,6	Location is accepted and saved into the database	3,6 Is displayed with no errors or warnings
SE-F-057	FR8	Create/Update Reserve Location with 2 characters	3,	Location is rejected and not saved	An error appears alerting the user that they have not entered enough characters
SE-F-058	FR8	Textual description	Description can be edited and updated	Description will appear for the species.	Data is appeared correctly

4.4. FR9 – Browsing Species Records

SE-F-059	FR9	Check if species found at a particular reserve can be displayed	Name of reserve e.g. Coed Rhiedol National Nature Reserve	Species that have been found at that reserve	All species that are found at the nature reserve are displayed
SE-F-060	FR9	Check if species found at a reserve that does not exist can be displayed	Name of a reserve that does not exist e.g. abc	An error message should be shown	No records should be shown
SE-F-061	FR9	Check if data can be displayed in alphabetical order of Latin name	A list of unsorted data	List of results ordered by their Latin name	Species are ordered A-Z
SE-F-062	FR9	Check if data can be displayed in reverse alphabetical order of Latin name	A list of unsorted data	List of results ordered by their Latin name	Species are ordered Z-A
SE-F-063	FR9	Check if a record with a particular date can be displayed	A record recorded on the current date	The record is displayed	The record from the date is displayed
SE-F-064	FR9	Check if the earliest recording can be displayed	A record recorded on 1st January 1990	The record is displayed	The earliest recording is displayed
SE-F-065	FR9	Check if a recording dated before the earliest entry date can be displayed	A record recorded before 1st January 1990	The record is not displayed	The recording taken before 1st January 1990 is not shown
SE-F-066	FR9	Check if the latest recording can be displayed	A record recorded on 31st December 2050	The record is displayed	The latest recording is displayed

SE-F-067	FR9	Check if a recording dated after the latest entry date can be displayed	A record recorded after 31st December 2050	The record is not displayed	The recording taken after 31st December 2050 is not shown
SE-F-068	FR9	Check if records can be ordered by date	A list of unsorted data	Full list of sorted results	List is ordered by date (newest to oldest)
SE-F-069	FR9	Check if records can be reverse-ordered by date	A list of unsorted data	Full list of sorted results	List is ordered by date (oldest to newest)

4.5. EIR – External Interface Requirements

SE-F-070	EIR1	Check if user is able to navigate the application with minimal training	A new user using the web application for the first time	Feedback from the user about their experience	Positive feedback from the user

4.6. PR – Performance Requirements

SE-F-071	PR1	Check if user input is responded to within a second by the application	Input from the user	Changes to data displayed	Changes are shown within a certain amount of time
SE-F-072	PR2	Check if software runs as expected on supported systems	Application used on web browsers used by the university	Application displays information requested by the user	Application and its components work correctly

5. System Test Specification

5.1. Introduction

The System Test Specification has been created by tcg2 and add20 they derived these tests using the documentation provided by the client, SE.QA.RS and also the groups own Project Plan documentation SE_11_PP. These tests are a compilation of all the other test specification to be conducted at the end of the build by the QA (add20) and DQA (tcg2).The tests offer a comprehensive test specification of the entire system once the build has been completed it will test every aspect of the system from the website to the android and database to ensure the entire system works in compilation.

5.2. Android Table

5.2.1. Recordings and Species Module testing

Test ref	Req. being tested	Test content	Input	Output	Pass criteria
	FR2	Test a valid phone number for a recorder.	01234564854	Phone number is accepted when sent to the database.	No errors or warnings are produced.
	FR2	Test a phone number that contains characters.	01a23d65845	Phone number is rejected when the user attempts to submit the data.	An error is displayed to the user alerting them that the phone number is invalid due to characters.
	FR2	Test a phone number that contains special characters.	215!254@*90	Phone number is rejected when the user attempts to submit the data.	An error is displayed to the user alerting them that the phone number is invalid due to special characters.
	FR2	Test a valid date.	06/11/2014	The date is accepted and sent to the database.	No warnings or errors are produced.

	FR2	Test a historic date.	06/11/1900	The date is rejected when the user attempts to submit the data.	An error is displayed to the user alerting them that the date is too far in the past.
	FR2	Test a date in the future.	A date further in the future of the current date	The date is rejected when the user attempts to submit the data.	An error is displayed to the user alerting them that the date cannot be in the future.
	FR3	Test a valid species from the list.	Search for a valid species that exists within the database.	The species is accepted when the user submits the data.	No warnings or errors are produced.
	FR3	Search for a species that does not exist.	Search for '$FS465bth'	No results will be returned.	A message will alert the user that no matching results were obtained. A prompt to add a new species will appear.
	FR3	Test a valid unique species can be added.	Attempt to add a new valid species.	The new species will be added to the database when submitted.	No warning or error message will be displayed to the user as the data is valid.
	FR3	Test that a repeat of a species cannot be entered.	Attempt to add a new valid species that already exists in the database.	The new species will not be added to the database.	An error will be displayed to the user alerting them to the fact a duplicate of this species already exists.
	FR4	Test a valid abundance character.	'A'	The character is accepted as valid on submission and sent to the database.	No error message or warning is produced for the valid character.

	FR4	Test an invalid abundance character.	‘Z’	The character will be rejected when the user attempts to submit data.	An error is displayed to the user alerting them that the abundance character is invalid.
	FR4	Test multiple characters in the abundance field.	‘FA’	The character will be rejected when the user attempts to submit the data.	An error is displayed to the user alerting them that only one character can be entered into the abundance field.
	FR4	Test no entry in the free text comment area.	Enter no data to the free text area.	On submission the data will be sent to the database.	No warning or error messages will be displayed for the valid entry.
	FR4	Test a valid entry in the free text comment area.	Enter more than 0 and less than 256 characters.	On submission the data will be sent to the database.	No warning or error message will be displayed for the valid entry.
	FR4	Test a comment that is more than the maximum number of valid characters in the free text comment field.	Enter more than 256 characters in the free text comment field.	The data will be rejected when the user attempts to submit the data.	An error message will alert the user to the fact that the free comment box is only able to take a comment of 256 characters or less.
	FR4	Testing the camera is loaded when the scene camera icon is pressed.	Press the scene camera icon.	The screen is switched to camera output.	The user can take a picture with the camera which is then saved.

	FR4	Testing the camera is loaded when the plant camera icon is pressed.	Press the plant camera icon.	The screen is switched to camera output.	The user can take a picture with the camera which is then saved.
	FR5	Testing a recording can be deleted.	Select a recording and press delete.	The recording will no longer be displayed in the list.	The database will no longer contain the recording that was deleted.
	FR5	Test a whole species can be deleted.	Select a pre-existing species and press delete.	The recording will no longer be displayed in the list.	The database will no longer contain the recording that was deleted.
	FR5	Change the abundance of a species.	Select a pre-existing species and change the abundance to a valid abundance.	The species will now be updated with the new abundance.	The database will be updated to match the new information given on submission.
	FR5	Change the abundance of a species to a non-valid abundance.	Select a pre-existing species and change the abundance to a non-valid abundance.	When the user submits the change the change is rejected.	An error message is produced alerting the user that the input for abundance is not valid.
	FR5	Change the typical location for a species.	Select a pre-existing species and change the pre-existing location to a new valid location.	The species record will be updated with the new value for typical location.	No errors or warning messages are produced as the data is valid.

	FR5	Change the image of a species (plant).	Select a pre-existing species and change the plant image to a valid image.	The species plant image will be updated with the new image.	The database will be updated to match the new information given on submission.
	FR5	Change the image of a species (scene).	Select a pre-existing species and change the scene input to a valid image.	The species scene image will be updated with the new image.	The database will be updated to match the new information given on submission.

5.2.2. Functionality

Test ref	**Req. being tested**	**Test content**	**Input**	**Output**	**Pass criteria**
	FR3	Search for a certain plant in the database	Enter a plant name that is in the database	A drop down list containing plant searched for	If plant appears in drop down list
	FR3	Search for a plant alphabetically	Enter the first letter or couple of letters	A drop down list populated with plants that match letter(s) going from common to rare	If first letter(s) match those of first letter(s) of plants in drop down list
	FR3	Search for a plant not in the database	Enter a plant name that is not in the database	A drop down list with option to add new plant	If add new plant option appears in drop down
	FR5	Display entries according to date	Test database of entries. Two with same day & month, two with same month & year, two with same day & year and two completely same dates	Display entries going from closest date then progressing back to oldest recorded record	If entries are grouped by year and month

	PR1	GPS is turned off when app is closed/goes inactive (If GPS is only to be active when app is)	App is closed/goes inactive	Phone GPS is deactivated	If phone settings show GPS is off after app use
	FR4	Search for a certain reserve in the database	Enter a reserve name that is in the database	A drop down list containing reserve searched for	If reserve appears in drop down list
	FR4	Search for a reserve alphabetically	Enter the first letter or couple of letters	A drop down list populated with reserves that match letter(s)	If first letter(s) match those of first letter(s) of reserves in drop down list
	FR4	Search for a reserve not in the database	Enter a reserve that is not in the database	A drop down list stating unable to locate reserve	If unable to find reserve appears for the user
	FR4	When a picture is taken that the GPS coordinates are recorded	Take a picture	GPS coordinates are entered into field to be sent	If record contains GPS coordinates
	FR2, FR8, FR9	Test logon id validation with one in user database	Enter e-mail of member on system	Proceed to password validation	Logon id is confirmed to be a user in database
	FR2, FR8, FR9	Test logon id validation with one not in user database	Enter e-mail of a non-member	Display ‘unable to recognize logon/ password’	Logon id is confirmed as not in user database
	FR2, FR8, FR9	Test if correct password is entered	Enter correct password for logon id	Proceed to next screen	Password matches password linked to Logon id

	FR2, FR8, FR9	Test if an incorrect password is detected	Enter incorrect password for logon id	Display ‘unable to recognize logon/ password’	If password is confirmed as not matching password linked to Logon id
	FR2, FR8, FR9	Test access level which is valid	Member’s access level	Proceed to next screen	If access level is recognized as being greater than or equal to required level
	FR2, FR8, FR9	Test access level which is not valid	Member’s access level	Display ‘Access denied’	If access level is recognized as being less than required level
	FR5	Test if any entries are on your phone	Request list of previous entries with no entries	Display ‘Not previous entries currently stored’	If displays message for user as no entries to display
	PR1	Test if user notified they can upload with WiFi connection made (only if that is their upload option)	Phone connects to WiFi while app is active	Upload icon lights up	If Icon changes and setting is for WiFi
	PR1	Test if user notified they can upload with signal at a good strength to ensure transition (only if that is their upload option)	Phone signal is at or above a certain strength while app is active	Upload icon lights up	If Icon changes and setting is for using phone’s signal

	PR1	Test if user notified they can upload with WiFi when no connection is made (only for WiFi upload option)	Phone signal is at or above a certain strength while app is active	Upload icon does not light up	If Icon does not change and setting is for WiFi

5.3. Database Table

5.3.1. Recordings Table

Test Ref	**Req being tested**	**Test Content**	**Input**	**Output**	**Pass Criteria**
SE-F-073	FR2,FR8	Check if the database can store a valid reserve_id	A valid reserve id such as 7 or 75 which has a corresponding reserve record	The reserve id is successfully stored in the relevant row	Data is stored correctly without errors or warnings
SE-F-074	FR2,FR8	Check if the database can store an invalid reserve_id	An invalid reserve id such as “reserve 51”	The reserve id is not successfully stored and an error is given	Data is not stored and an error is given
SE-F-075	FR2,FR8	Check if the database can store a valid user_id	A valid user id such as 3 or 22 which has a corresponding user record	The user id is successfully stored in the relevant row	Data is stored correctly without errors or warnings
SE-F-076	FR2,FR8	Check if the database can store an invalid user_id	An invalid user id such as “user 98”	The user id is not successfully stored and an error is given	Data is not stored and an error is given

5.3.2. Reserves Table

Test ref	Req. being tested	Test content	Input	Output	Pass criteria
SE-F-077	FR7	Check if database can store common reserve name	Name of the nature reserve	The database should store the newly entered reserve	Data is stored correctly without any problems
SE-F-078	FR7	Check if database can store common reserve name past the varchar limit	Enter a name of length greater than 50	The data entry should fail	Data should not appear in the database
SE-F-079	FR8	Enter an OS grid reference that corresponds to the location of the reserve	A grid reference of correct length and format	The database should store the reference	Data is stored correctly without any problems
SE-F-080	FR8	Enter an OS grid reference that corresponds to the location of the reserve	A grid reference of correct length but incorrect format	The data entry should be re-formatted and stored in the database	Data is stored correctly without any problems
SE-F-081	FR8	Enter an OS grid reference that corresponds to the location of the reserve	A grid reference of incorrect length and incorrect format	The data entry should fail	Data is not stored in the database
SE-F-082	FR8	Enter a textual description of the reserve	Text of length greater than 0	The database should store the description	Data is stored correctly without any problems
SE-F-083	FR8	Enter an empty description of the reserve	An empty string	The data entry should fail	Data is not stored in the database

5.3.3. Species Table

Test Ref	Req being Tested	Test Content	Input	Output	Pass Criteria
SE-F-084	FR7	Check if database can store common name.	Enter the common name of the Species e.g. European Silver-fir	The database should store the newly entered species.	Data is stored correctly without any problems
SE-F-085	FR7	Check if database can store a common name past the varchar (50) limit.	Enter a common name of the species which is beyond the 50 character limit.	The data entered into the database should fail.	Data should not appear in the database
SE-F-086	FR7	Check if database can store Latin name.	Enter the Latin name of the Species e.g. Abies alba Mill	The database should store the newly entered species.	Data is stored correctly without any problems
SE-F-087	FR7	Check if database can store a Latin name past the varchar (100) limit.	Enter a Latin name of the species which is beyond the 100 character limit.	The data entered into the database should fail.	Data should not appear in the database
SE-F-088	FR7	Check if database adds a timestamp every time a new row gets created or updated	Add a new species to the database	A time stamp should be automatically created in the database.	Timestamp should be created with the right time.

5.3.4. Species Occurrence Table

Test Ref	Req being tested	Test Content	Input	Output	Pass Criteria
SE-F-089	FR7	Check if the database can store a valid species_id	A valid species id such as 2 or 24 which has a corresponding species record	The species id is successfully stored in the relevant row	Data is stored correctly without errors or warnings
SE-F-090	FR7	Check if the database can store an invalid species_id	An invalid species id such as “species 123”	The species id is not successfully stored and an error is given	Data is not stored and an error is given
SE-F-091	FR7	Check if the database can store a valid recording_id	A valid recording id such as 5 or 47 which has a corresponding recording record	The recording id is successfully stored in the relevant row	Data is stored correctly without errors or warnings
SE-F-092	FR7	Check if the database can store an invalid recording_id	An invalid recording id such as “recording 34”	The recording id is not successfully stored and an error is given	Data is not stored and an error is given
SE-F-093	FR7	Check if the database can store a valid longitude	A valid longitude such as 52° 24' 55.0908"	The longitude is successfully stored in the relevant row	Data is stored correctly without errors or warnings
SE-F-094	FR7	Check if the database can store an invalid longitude	An invalid longitude which exceeds the 20 character limit	The longitude stored but is truncated	Data is only partly stored and a warning is given regarding truncation

SE-F-095	FR7	Check if the database can store a valid latitude	A valid latitude such as -4° 4' 58.5114"	The latitude is successfully stored in the relevant row	Data is stored correctly without errors or warnings
SE-F-096	FR7	Check if the database can store an invalid latitude	An invalid latitude which exceeds the 20 character limit	The latitude is stored but is truncated	Data is only partly stored and a warning is given regarding truncation
SE-F-097	FR7	Check if the database can store a valid abundance	A valid abundance which is either ‘D’, ‘A’, ‘F’, ‘O’ or ‘R’	The abundance is successfully stored in the relevant row	Data is stored correctly without errors or warnings
SE-F-098	FR7	Check if the database can store an invalid abundance	An invalid abundance such which is not in the enum such as “lots”	The abundance is not successfully stored and an error is given	Data is not stored and an error is given
SE-F-099	FR7	Check if the database can store a valid comment	A valid comment such as “plenty of this species in this area”	The comment is successfully stored in the relevant row	Data is stored correctly without errors or warnings
SE-F-100	FR7	Check if the database can store an invalid comment	An invalid comment which exceeds the limit of the text type. (***L*** + 2 bytes, where ***L*** < 2^{16}) [1]	The comment is stored but is truncated	Data is only partly stored and a warning is given regarding truncation
SE-F-101	FR7	Check if the database can store a valid general photo	A valid general photo such as “img0029.jpg”	The general photo is successfully stored in the relevant row	Data is stored correctly without errors or warnings

SE-F-102	FR7	Check if the database can store an invalid general photo	An invalid general photo which exceeds the 255 character limit	The general photo is stored but is truncated	Data is only partly stored and a warning is given regarding truncation
SE-F-103	FR7	Check if the database can store a valid specimen photo	An valid specimen photo such as “img0103.jpeg”	The specimen photo is successfully stored in the relevant row	Data is stored correctly without errors or warnings
SE-F-104	FR7	Check if the database can store an invalid specimen photo	An invalid specimen photo which exceeds the 255 character limit	The specimen photo is stored but is truncated	Data is only partly stored and a warning is given regarding truncation

5.3.5. Users Table

Test Ref	**Req being tested**	**Test Content**	**Input**	**Output**	**Pass Criteria**
SE-F-105	FR7	Check if the database can store a valid email	A valid email such as “kid10@aber.ac.uk”	The email is successfully stored in the relevant row	Data is stored correctly without errors or warnings
SE-F-106	FR7	Check if the database can store an invalid email	An invalid email which exceeds the 254 character limit	The email is stored but is truncated	Data is only partly stored and a warning is given regarding truncation
SE-F-107	FR7	Check if the database can store a valid password	A valid password such as an encrypted version of “pass1234”	The password is successfully stored in the relevant row	Data is stored correctly without errors or warnings

SE-F-108	FR7	Check if the database can store an invalid password	An invalid password which exceeds the 255 character limit	The password is stored but is truncated	Data is only partly stored and a warning is given regarding truncation
SE-F-109	FR7	Check if the database can store a valid name	A valid name such as “Joe Bloggs”	The name is successfully stored in the relevant row	Data is stored correctly without errors or warnings
SE-F-110	FR7	Check if the database can store an invalid name	An invalid name which exceeds the 50 character limit	The name is stored but is truncated	Data is only partly stored and a warning is given regarding truncation
SE-F-111	FR7	Check if the database can store a valid phone number	A valid phone number such as 0123456789	The phone number is successfully stored in the relevant row	Data is stored correctly without errors or warnings
SE-F-0112	FR7	Check if the database can store an invalid phone number	An invalid phone number which exceeds the 25 character limit	The phone number is stored but is truncated	Data is only partly stored and a warning is given regarding truncation

5.4. Web Test Specification

5.4.1. FR7 – Server Receives Recording

Test ref	Req being tested	Test content	Input	Output	Pass criteria
SE-F-113	FR7	Server receives transmissions of recordings and stores them in the database.	A record is transmitted to the server and stored in the database.	Server receives the input and then stores it in the database correctly.	New recording is in the database.
SE-F-114	FR7	User X is authenticated	User name and password.	User name will display in the 'You' page. The server knows the user is in session.	Correct user name is displayed. Correct user data is displayed.
SE-F-115	FR7	User is authorised to access the website.	User name and password.	User is logged into the site.	User X has access to the web app.

5.4.2. FR8 – Addition and Maintenance of Reserves

SE-F-116	FR8	Create/Update Reserve Name with a valid name	Aber	Name is accepted and saved into the database	Aber is displayed with no errors or warnings
SE-F-117	FR8	Create/Update Reserve Name with numbers	1476	Name is rejected and not saved	An error appears alerting the user that numbers are not allowed

SE-F-118	FR8	Create/Update Reserve Name with 50 characters (Upper Boundary)	Aberystwyth reserve of nature and plants and trees	Name is accepted and saved into the database	Aberystwyth reserve of nature and plants and trees Is displayed with no errors or warnings
SE-F-119	FR8	Create/Update Reserve Name with 50 characters	Aberystwyth reserve of nature plants biology study	Name is rejected and not saved	An error appears alerting the user that they have gone over the character limit
SE-F-120	FR8	Create/Update Reserve Name with 4 characters (Lower Boundary)	Aber	Name is accepted and saved into the database	Aber is displayed with no errors or warnings
SE-F-121	FR8	Create/Update Reserve Name with 3 characters	abe	Name is rejected and not saved	An error appears alerting the user that they have not entered enough characters
SE-F-122	FR8	Delete Reserve	Press Delete	The Reserve Is deleted	The record of the reserve is no longer on the database
SE-F-123	FR8	Check if there are duplicate names or if name is saved	User inputs a name and make sure there are no duplicates.	The name is displayed and stored in the database	Name is displayed without any duplicates

SE-F-124	FR8	Create/Update Reserve Location that is valid	20.534, 50.435	Location is accepted and saved into the database	20.534, 50.435 is displayed with no errors or warnings
SE-F-125	FR8	Create/Update Reserve Location with characters	3kfm , 34jdd	Location is rejected and not saved	An error appears alerting the user that they can't use Alphabetical characters
SE-F-126	FR8	Create/Update Reserve Location with 20 Characters (Upper Boundary)	304.22581, 250.14858	Location is accepted and saved into the database	304.22581, 250.14858 Is displayed with no errors or warnings
SE-F-127	FR8	Create/Update Reserve Location with 21 characters	254.21687, 145.257894	Location is rejected and not saved	An error appears alerting the user that they have gone over the character limit
SE-F-128	FR8	Create/Update Reserve Location with 3 characters (Lower Boundary)	3,6	Location is accepted and saved into the database	3,6 Is displayed with no errors or warnings
SE-F-129	FR8	Create/Update Reserve Location with 2 characters	3,	Location is rejected and not saved	An error appears alerting the user that they have not entered enough characters

SE-F-130	FR8	Textual description	Description can be edited and updated	Description will appear for the species.	Data is appeared correctly

5.4.3. FR9 – Browsing Species Records

SE-F-131	FR9	Check if species found at a particular reserve can be displayed	Name of reserve e.g. Coed Rhiedol National Nature Reserve	Species that have been found at that reserve	All species that are found at the nature reserve are displayed
SE-F-132	FR9	Check if species found at a reserve that does not exist can be displayed	Name of a reserve that does not exist e.g. abc	An error message should be shown	No records should be shown
SE-F-133	FR9	Check if data can be displayed in alphabetical order of Latin name	A list of unsorted data	List of results ordered by their Latin name	Species are ordered A-Z
SE-F-134	FR9	Check if data can be displayed in reverse alphabetical order of Latin name	A list of unsorted data	List of results ordered by their Latin name	Species are ordered Z-A
SE-F-135	FR9	Check if a record with a particular date can be displayed	A record recorded on the current date	The record is displayed	The record from the date is displayed
SE-F-136	FR9	Check if the earliest recording can be displayed	A record recorded on 1st January 1990	The record is displayed	The earliest recording is displayed
SE-F-137	FR9	Check if a recording dated before the earliest entry date can be displayed	A record recorded before 1st January 1990	The record is not displayed	The recording taken before 1st January 1990 is not shown

SE-F-138	FR9	Check if the latest recording can be displayed	A record recorded on 31st December 2050	The record is displayed	The latest recording is displayed
SE-F-139	FR9	Check if a recording dated after the latest entry date can be displayed	A record recorded after 31st December 2050	The record is not displayed	The recording taken after 31st December 2050 is not shown
SE-F-140	FR9	Check if records can be ordered by date	A list of unsorted data	Full list of sorted results	List is ordered by date (newest to oldest)
SE-F-141	FR9	Check if records can be reverse-ordered by date	A list of unsorted data	Full list of sorted results	List is ordered by date (oldest to newest)

5.4.4. EIR – External Interface Requirements

SE-F-142	EIR1	Check if user is able to navigate the application with minimal training	A new user using the web application for the first time	Feedback from the user about their experience	Positive feedback from the user

5.4.5. PR – Performance Requirements

SE-F-143	PR1	Check if user input is responded to within a second by the application	Input from the user	Changes to data displayed	Changes are shown within a certain amount of time
SE-F-144	PR2	Check if software runs as expected on supported systems	Application used on web browsers used by the university	Application displays information requested by the user	Application and its components work correctly

6. REFERENCES

[1] – SE.QA.RS – Requirement Specification – N.W.Hardy

[2] – SE_11_PP – Project Plan – Group 11

[3] – SE_11_TS_01 – Android Test Specification – Group 11

[4] – SE_11_TS_02 – Database Test Specification – Group 11

[5] – SE_11_TS_03 – System Test Specification – Group 11

[6] – SE_11_TS_04 – Website Test Specification – Group 11

7. DOCUMENT HISTORY

Version	CCF No.	Date	Changes made to document	Changed by
1.0	N/A	13/11/14	Document Created and Structured	Tcg2