



Department of Computing
Bachelor of Science (Hons) in Software Development

Creche Connect

Functional Specification

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1. Introduction

The Creche Connect application aims to create a simple and secure platform for childcare practitioners to track the pupil's progress and communicate effectively with parents/guardians about their child's development.

2. Positioning

Ireland's childcare sector employs almost 31,000 childcare professionals to care for more than 200,000 children in 4,600 childcare centres[1].

There are many management applications for Early Years and Pre-School on the market: ECCeSoft [2], TeachKloud [3], Child Paths [4], Little Vista [5] etc.

The overall problem with these applications is that although they are good, they tend to be complicated and over-engineered. These applications are trying to do too much.

2.1. Value Proposition

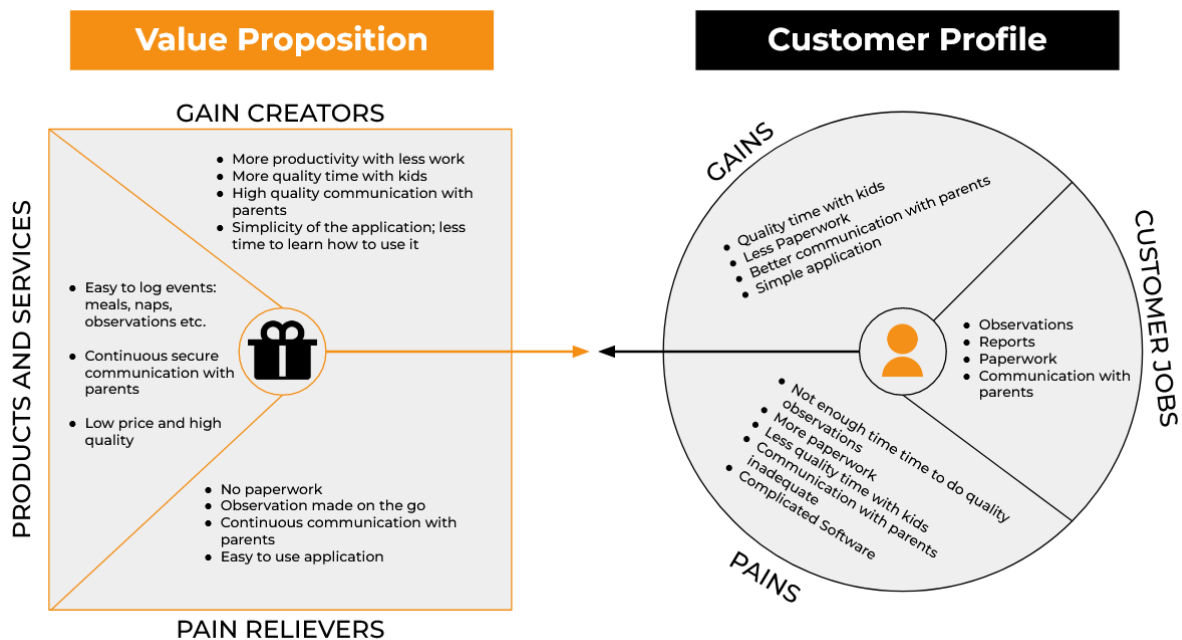


Figure 2-1. Value Proposition. **Source:** Author

The Creche Connect application will focus on tracking the child's progress from the day of registration to the last day in service and improving communication with parents/guardians.

Intuitive and simple design will make the life of childcare practitioners easier so they can devote more time to the children in their care rather than trying to learn complex software.

A very important feature of the application will be an option to export the child's progress details as a PDF so it can be kept and stored as a soft or hard copy. It will allow childcare centres to keep a child's file for a long time after it leaves the creche as per the requirements of the regulation [6].

The Creche Connect is multi-platform, meaning it does not matter what device is available for a practitioner's phone, tablet or desktop. They can make observations and add them to the application using their preferred tool.

Creche Connect has a built-in communication option which allows the exchange of messages between parents and childcare practitioners. The built-in communicator can attach pre-generated daily reviews based on the entries made by the childcare practitioner. These reports can then be forwarded to parents so they can keep an eye on their child's progress and reply to them if they have any further enquiries. Compared to other child management apps, The Creche Connect offers more productivity, less work, and much more quality for less money.

2.2. Problem Statement

The problem of	The lack of simple applications to track a child's progress and to communicate with guardians/parents.
Affects	Childcare practitioners and parents.
The impact of which is	Time spent on doing paperwork or learning new software impacts time dedicated to children.
A successful solution would be	A simple application with an intuitive design where even parents or staff who are not confident with modern technologies can use it efficiently without spending too much time learning it.

Table 2-1. Summary of the problem solved by the application. **Source:** Author

2.3. Product Position Statement

For	Childcare practitioners, parents/guardians.
Who	They will be able to easily record children's progress and communicate with parents more effectively.
The Creche Connect	Is a web app application.

That	It provides an intuitive interface which allows staff to use it more effectively.
Unlike	Currently, existing applications are over-engineered and trying to do too much.
Our product	Is a simple web app application which doesn't require an intense learning curve. It will improve communication between parents and childcare practitioners and simplify tracking the children's progress. The child's progress and observations can be easily forwarded to parents via the application. Secure communication can be made only with the assigned parent/guardian so that the information can be sent only to the correct person.

Table 2-2. An overview of how the application will fill a market niche. **Source:** Author

3. Stakeholder and User Descriptions

3.1. User Summary

Name	Description	Responsibilities
Childcare practitioner	This person uses the product.	Uses the application to make observations and generate reports.
Creche manager	This person uses the product.	Uses the application to register a child into service, make observations, generate reports and communicate with parents.
Parent	This person uses the product.	Uses the application to track the progress of the child.

Table 3-1. An overview of all users. **Source:** Author

3.2. User Environment

The Creche Connect is a Progressive Web App which means that it will run in a browser of the device used by the childcare practitioner, creche manager or parent, regardless of the operating system.

4. Product Overview

4.1. Product Perspective

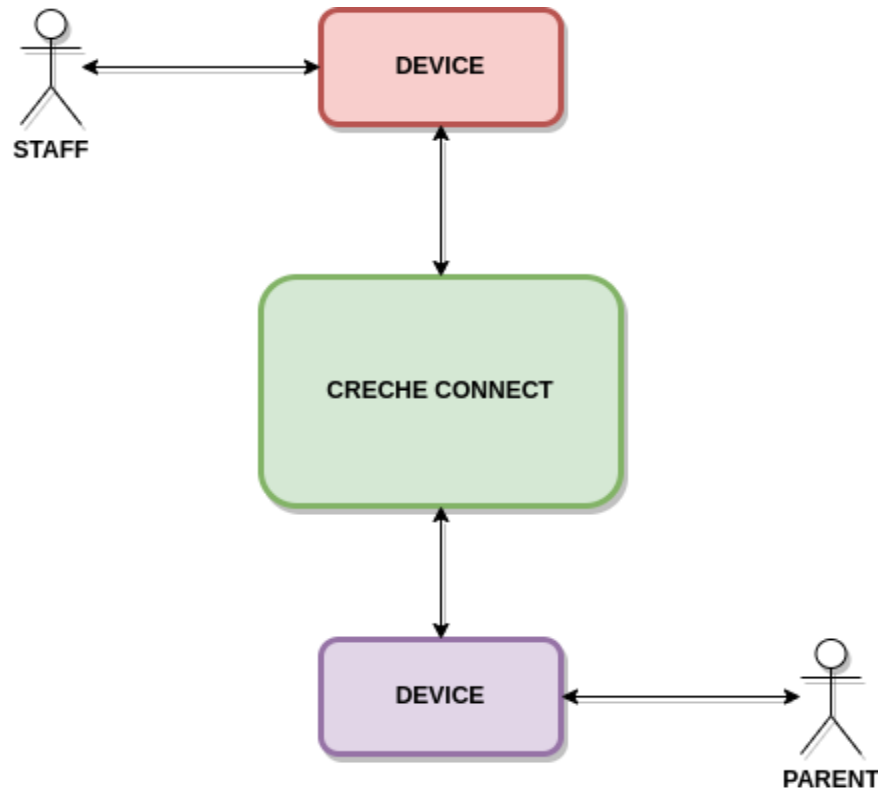


Figure 4-1. Overview of the Creche Connect application. **Source:** Author

4.2. Assumptions and Dependencies

Assumptions	Dependencies
Users have access to the internet.	The application will run on Windows, Linux and Mac OS X systems.
Users will have access to a device like a tablet, phone or desktop PC.	The application will be responsive and offer the same functionality regardless of the device used.

Table 4-2. Summary of assumptions and dependencies. **Source:** Author

5. Product Features

5.1. System features

- Application will have three different level users.
- Childcare practitioner, creche manager or parent can log into the application
- Practitioner or manager can search the application for existing children
- Creche manager can add new children into the system
- Main menu will display options available for a user
- Practitioner or manager can add events like time of meals, what was for a meal, time of a nappy and select a state of it, enter the activities that child was participating in and some other important information.
- Creche managers can communicate with parents/guardians through the built-in message function.
- Users can log out from the application
- Application will have a logout timer

5.2. Communication features

- Typing in the text
- Deleting the text
- Pic attachment

6. Constraints

6.1. Security

The application should be secure to withstand the standard methods of attack like [7]:

- Cross-site scripting (XSS)
- SQL injection (SQLi)
- Denial-of-service (DoS)
- Distributed denial-of-service (DDoS)
- Memory corruption
- Buffer overflow
- Cross-site request forgery (CSRF)
- Data breach

6.2. Data protection

In accordance with the Data Protection Act 2018, GDPR will be applied by default to the majority of personal data processing [8].

6.3. Operational excellence

Application will provide continuous 24/7/365 monitoring of service, enabling it to commit to a Service Level Agreement (SLA) of 99.9% system availability.

7. Use Case Diagram

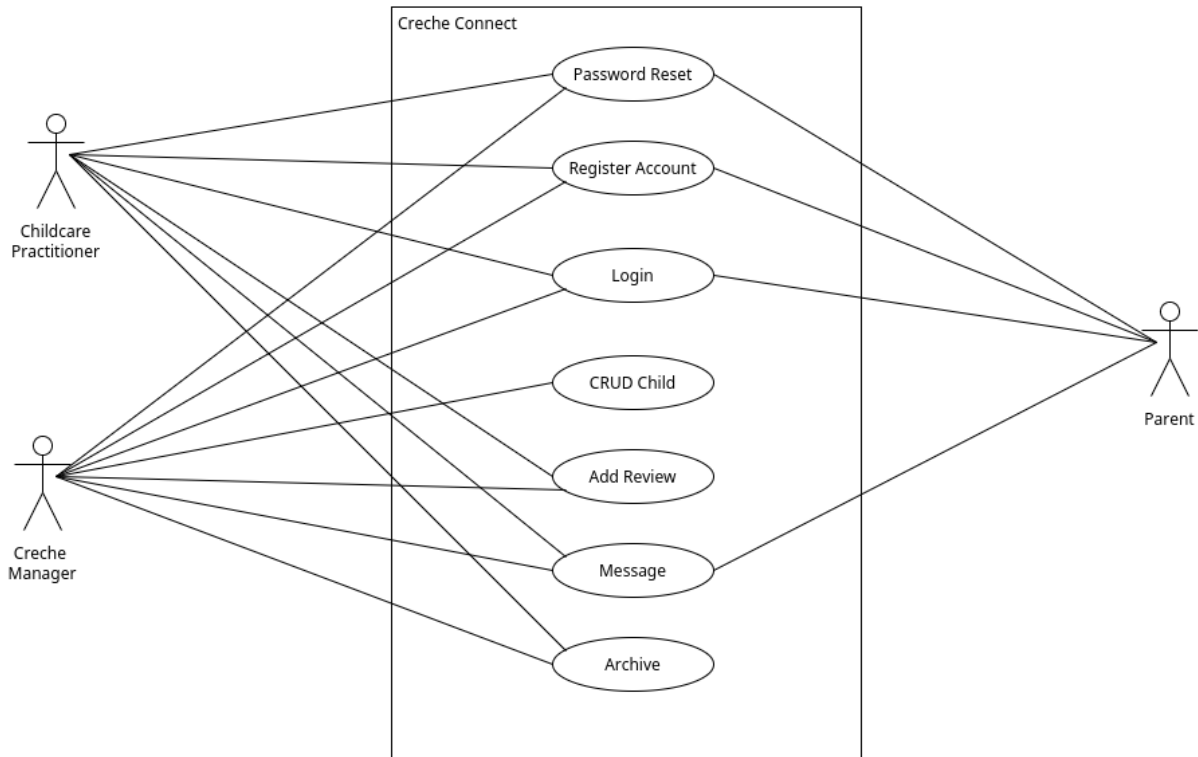


Figure 7-1. Use Case Diagram. **Source:** Author

8. Non-Functional Requirements

The acronym FURPS [9] is Functionality, Usability, Reliability, Performance, and Supportability. Over time, the need to see the solution from more dimensions led to the emergence of FURPS+. The FURPS+ technique made it possible to classify requirements according to the different types of non-functional requirements.

8.1. Functionality

Communicating with parents/guardians is the application's main feature. It allows the manager, childcare practitioner and parent to communicate with each other securely.

8.2. Usability

Creche Connect focus is on user experience. A person who is not confident about technology should be able to comfortably steer around the application menu. Accessing the communication screen and composing a message should take 2 seconds.

8.3. Reliability

A reliable and stable application is essential at all times. For the software to be reliable, it must work consistently and be dependable for everyone 99% of the time.

8.4. Performance

It is essential that the application can cater to 100 users creating a message simultaneously and expanding to accommodate more users at any given time. Its response time must be fast for Creche Connect to remain popular and maintain customer satisfaction. The average response time for the application should be a maximum of 1 second.

8.5. Supportability

Creche Connect should be able to support any screen because it is built as Progressive Web App (PWA) [10]. PWAs are websites styled like apps that can be run inside a website browser or installed directly onto the device. These cross-platform applications can be displayed seamlessly on almost any mobile device's web browser.

8.6. Security

Like any other website or web application, PWAs [11] are secure because they follow Hypertext Transfer Protocol Secure (HTTPS) requirements. Also, because PWAs use web browsers, they come with all the security features present in web browsers today.

9. Brief Use Cases

9.1. Register account

Use Case Name: Register account
Actor(s): Creche manager, childcare practitioner, parent
Description: The use case begins when the creche manager, childcare practitioner or parent needs to register an account with the application. The creche manager, childcare practitioner or parent must fill in all required fields on the registration page and then submit the form. The use case ends when an actor is successfully registered with the application.

Table 9-1. Register account use case. **Source:** Author

9.2. Login

Use Case Name: Login
Actor(s): Creche manager, childcare practitioner, parent
Description: The use case begins when a creche manager, childcare practitioner or parent wishes to log into the application. An actor must fill in the email and password details and then submit the login page. The case ends when the actor successfully logs into the application.

Table 9-2. Login use case. **Source:** Author

9.3. CRUD Child

Use Case Name: CRUD Child
Actor(s): Creche manager
Description: The use case begins when the creche manager wishes to add a new child to the application. The creche manager fills in all required fields like the child's name, DOB, parent name, email, phone number, child's health information and some additional information that might be important. Once all attributes are filled in, the creche manager submits the form. The use case ends when a new child is added to the application.

Table 9-3. CRUD Child use case. **Source:** Author

9.4. Message

Use Case Name: Message
Actor(s): Creche manager, childcare practitioner, parent
Description: The use case starts when the creche manager or childcare practitioner is logged in to the application and selects an option to message. Parents, after successful login, are directed straight to the message screen. Actors will have the option to create a message. In the message, an actor can select who they wish to contact and then fill in the message details. The creche manager or childcare practitioner will have the option to attach information like Daily Reviews. Once the message is created, an actor must select an option to send it. The use case ends when a message is successfully sent.

Table 9-4. Communicate use case. **Source:** Author

9.5. Password Reset

Use Case Name: Password Reset
Actor(s): Creche manager, childcare practitioner, parent
Description: The use case starts when the creche manager, childcare practitioner or parent can't log in to the application because they can't recall their password and select option Forgot Password. Actors will have the option to enter the email address they registered with the application. The use case ends when the reset email is successfully sent.

Table 9-5. Password Reset use case. **Source:** Author

9.6. Add Review

Use Case Name: Add Review
Actor(s): Creche manager, childcare practitioner
Description: The use case starts when the creche manager or childcare practitioner is logged in to the application and selects an option to Add Review. Actors will have the option to add the time of the meal, what was in the meal, time of nappy and nappy status, activities and some other comments. The use case ends when a Review is successfully created.

Table 9-6. Add Review use case. **Source:** Author

9.7. Archive

Use Case Name: Archive
Actor(s): Creche manager, childcare practitioner
Description: The use case starts when the creche manager or childcare practitioner is logged in to the application and selects an option to access Archive. Actors will have the option to search all daily reviews by child's name and date. Also, they will have the option to print their search results. The use case ends when a search result is printed successfully, or the creche manager or childcare practitioner returns to the home page.

Table 9-7. Archive use case. **Source:** Author

10. Detailed Use Case

10.1. Message

Use case name: Message	UniqueID: UC001
Area:	Creche Connect website
Actor(s):	Creche manager, childcare practitioner, parent
Description:	A creche manager, childcare practitioner or parent is logged in to the application. A parent is directed to the message screen, where a creche manager or childcare practitioner selects an option to message.
Triggering event:	The creche manager, childcare practitioner or parent is on the message page.
Steps performed (main path):	
1. Creche manager or childcare practitioner selects an option to message.	
2. The application will take a creche manager or childcare practitioner to the message screen.	
3. Creche manager, childcare practitioner or parent searches for someone to communicate with.	
4. An actor selects the recipient of the message.	
5. An actor enters the message details in the body of the message.	
6. An actor selects an option to send the message.	
7. Actor can return to the main menu or select another recipient to communicate with.	
Alternatives:	3a. Recipient not found: <ol style="list-style-type: none"> 1. An actor is presented with a pop-up informing that the person was not found. 2. An actor must verify recipient details and then repeat step 3.

	<p>6a. The message failed to send:</p> <ol style="list-style-type: none"> 1. An actor is presented with a pop-up informing that the message failed to send. 2. An actor repeats step 5.
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Table 10-1. Message detailed use case. **Source:** Author

10.2. Login

Use case name: Login	UniqueID: UC002
Area:	Creche Connect website
Actor(s):	Creche manager, childcare practitioner, parent
Description:	A creche manager, childcare practitioner or parent is on the login page trying to log in to the application.
Triggering event:	The creche manager, childcare practitioner or parent selects an option to log in.
Steps performed (main path):	
1. An actor visits the Creche Connect login website.	
2. An actor fills in the required fields: email and password.	
3. An actor clicks the Sign in button.	
4. An actor is taken to the Home page.	
Alternatives:	<p>3a. The entered credentials are invalid:</p> <ol style="list-style-type: none"> 1. An actor is presented with a pop-up message informing that the details entered were invalid. 2. An actor repeats step 2. <p>1a. An actor is not registered:</p>

	<ol style="list-style-type: none"> 1. An actor selects a link to register with the application. 2. After the successful registration, an actor attempts step 2. <p>1b. An actor can't remember the password:</p> <ol style="list-style-type: none"> 1. An actor selects a link to reset the password. 2. After the successful password reset, an actor attempts step 2.
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Table 10-2. Login detailed use case. **Source:** Author

10.3. Register

Use case name: Register	UniqueID: UC003
Area:	Creche Connect website
Actor(s):	Creche manager, childcare practitioner, parent
Description:	A creche manager, childcare practitioner or parent is on the login page but is not yet registered to use the application.
Triggering event:	The creche manager, childcare practitioner or parent selects an option to register with the application.
Steps performed (main path):	
1. An actor visits the Creche Connect login website.	
2. An actor selects the Register link to register with the Creche Connect application.	
3. An actor will be redirected to the Registration page.	
4. An actor fills in all required fields to register.	
5. An actor clicks the Sign Up button.	

6. An actor is redirected to the login page.	
Alternatives:	5a. The entered credentials are invalid: <ol style="list-style-type: none"> 1. An actor is presented with a pop-up message informing that the details entered were invalid. 2. An actor repeats step 4.

Table 10-3. Register detailed use case. **Source:** Author

10.4. Add Child

Use case name: Add Child	UniqueID: UC004
Area:	Creche Connect website
Actor(s):	Creche manager, childcare practitioner, parent
Description:	A logged-in creche manager selects an option to add a child from the application.
Triggering event:	A logged-in creche manager clicks on one of the buttons to add a child from the application.
Steps performed (main path):	
1. A manager is logged in and on the Home page.	
2. A manager press Add Child button.	
3. The application will take a manager to the Add Child screen.	
4. A manager enters the required information about the child and presses Add Child button.	
5. A manager is presented with a pop-up to confirm the action.	
6. Actor can return to the Home screen or add another child to the system.	
Alternatives:	5a. The entered credentials are invalid: <ol style="list-style-type: none"> 1. A manager cancels the process of adding a

	<p>child.</p> <p>2. A manager repeats step 4.</p> <p>5b. The entered credentials are invalid:</p> <ol style="list-style-type: none"> 1. A manager cancels the process of adding a child. 2. A manager returns to the Home screen. <p>5c. The entered credentials are correct:</p> <ol style="list-style-type: none"> 3. A manager cancels the process of adding a child. 4. A manager returns to the Home screen.
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Table 10-4. Add child detailed use case. **Source:** Author

10.5. Update Child

Use case name: Update Child	UniqueID: UC005
Area:	Creche Connect website
Actor(s):	Creche manager, childcare practitioner, parent
Description:	A logged-in creche manager selects an option to update a child from the application.
Triggering event:	A logged-in creche manager clicks on one of the buttons to update a child from the application.
Steps performed (main path):	
1. A manager is logged in and on the Home page.	
2. A manager selects a child to update information.	
3. A manager presses the Update Child button.	
4. The application will take a manager to the Update Child screen.	
5. A manager enters the required information about the child and presses the Save Changes button.	

6. A manager is presented with a pop-up to confirm the action.	
7. Actor returns to the Home screen.	
Alternatives:	<p>5a. The entered credentials are invalid:</p> <ol style="list-style-type: none"> 1. A manager cancels the process of updating a child. 2. A manager repeats step 4. <p>5b. The entered credentials are invalid:</p> <ol style="list-style-type: none"> 1. A manager cancels the process of updating a child. 2. A manager returns to the Home screen. <p>5c. The entered credentials are correct:</p> <ol style="list-style-type: none"> 1. A manager cancels the process of updating a child. 2. A manager returns to the Home screen.

Table 10-5. Update child detailed use case. **Source:** Author

10.6. Remove Child

Use case name: Remove Child	UniqueID: UC006
Area:	Creche Connect website
Actor(s):	Creche manager, childcare practitioner, parent
Description:	A logged-in creche manager selects an option to remove a child from the application.
Triggering event:	A logged-in creche manager clicks on one of the buttons to remove a child from the application.
Steps performed (main path):	
1. A manager is logged in and on the Home page.	
2. A manager selects a child to remove from the application.	

3. A manager presses the Remove button.	
4. A manager is presented with a pop-up to confirm the action.	
5. A child's record disappears from the Home screen.	
Alternatives:	4a. A manager cancels the process of removing a child.

Table 10-6. Remove child detailed use case. **Source:** Author

10.7. Add Review

Use case name: Add Review	UniqueID: UC007
Area:	Creche Connect website
Actor(s):	Creche manager, childcare practitioner
Description:	A creche manager or childcare practitioner is logged in to the application and selects an option to Add Review.
Triggering event:	The creche manager or childcare practitioner presses the button to Add Review.
Steps performed (main path):	
1. An actor is logged in and on the Home page.	
2. An actor presses Add Review button.	
3. The application will take an actor to the Add Review page.	
4. An actor enters the required information and presses the Add Review button.	
5. An actor is presented with a pop-up to confirm the action.	
6. An actor returns to the Home screen.	

Alternatives:	<p>5a. The entered credentials are invalid:</p> <ol style="list-style-type: none"> 1. An actor cancels the process of adding a review. 2. An actor repeats step 4. <p>5b. The entered credentials are invalid:</p> <ol style="list-style-type: none"> 1. An actor cancels the process of adding a review. 2. An actor returns to the Home screen. <p>5c. The entered credentials are correct:</p> <ol style="list-style-type: none"> 1. An actor cancels the process of adding a review. 2. An actor returns to the Home screen.
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Table 10-7. Add Review detailed use case. **Source:** Author

10.8. Archive

Use case name: Archive	UniqueID: UC008
Area:	Creche Connect website
Actor(s):	Creche manager, childcare practitioner, parent
Description:	A creche manager or childcare practitioner selects an option to access Archive.
Triggering event:	A creche manager or childcare practitioner presses the button to access Archive.
Steps performed (main path):	
1. An actor is logged in and on the Home page.	
2. An actor presses the Archive button.	
3. The application will take an actor to the Archive screen.	
4. An actor enters the child's name or date to access desired daily review.	

5. An actor views desired daily review.	
6. Actor can return to the Home screen or enter new search information.	
Alternatives:	<p>5a. The entered information is invalid:</p> <ol style="list-style-type: none"> 1. An actor is presented with a pop-up message advising that no review was found and to check the child's name or date and try again. 2. A manager repeats step 4. <p>6a. After viewing:</p> <ol style="list-style-type: none"> 1. An actor presses the Print button to print or save the desired review. 2. An actor returns to the Home screen. <p>6b. After viewing:</p> <ol style="list-style-type: none"> 3. An actor presses the Print button to print or save the desired review. 4. An actor repeats step 4.

Table 10-8. Archive detailed use case. **Source:** Author

10.9. Password Reset

Use case name: Password Reset	UniqueID: UC009
Area:	Creche Connect website
Actor(s):	Creche manager, childcare practitioner, parent
Description:	A creche manager, childcare practitioner or parent can't remember their password.
Triggering event:	The creche manager, childcare practitioner or parent selects Forgot Password link.
Steps performed (main path):	
1. An actor visits the Creche Connect login website.	
2. An actor selects Forgot Password link.	

3. The application will take an actor to the Forgot Password screen.	
4. An actor enters the email registered with the application.	
5. An actor can see the message advising that a reset password email was sent.	
6. An actor is redirected to the Login screen.	
Alternatives:	5a. The entered credentials are invalid: <ul style="list-style-type: none"> 1. An actor is presented with a pop-up message informing that the details entered were invalid. 2. An actor repeats step 4.

Table 10-9. Password Reset detailed use case. **Source:** Author

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