# DECO 7180 – Design and Computer Studio 1

Design and Proposal Plan


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# Table of Contents

# 1. The Scope.

Our goal, to create user-friendly website for people who are interested coral reefs in Queensland, no matter if they have related knowledge or not about coral reefs. The reason why we are designing this website idea is that we find most of the websites that are similar are hard to understand and to use. Some of these websites designs are too complex and they are primarily designed for people who have academic background, which is hard for the average user.

Most of these websites are designed for tourists. However, most of the tourist do not know much about coral reefs and all of these websites have fixed travel routes for users who cannot plan their own travel routes. Our website is designed for all people who is interested in reefs and corals and who wants to plan their own destination. We have design the layout of the website to be clear and concise. By making it clear and concise we have put all the main functions on the homepage to make our website user-friendly. We hope our website will be easy for users who can search for reefs and plan their own destination with minimal steps on our website.

Ultimately we hope our website will be used by all travel agencies and users because of the simplicity and beauty of the website.

## 2. Background / Website Inspirations /Research.

There were several websites that has inspired us to create better website platform. Edward Tufte quoted, ‘‘Clutter and confusion are not attributes of data – they are shortcomings of design.’’ – Edward Tufte (Rose, 2017).

Tufte composing is significant in such fields as data plan and visual education, which manage the visual correspondence of data. He instituted the word ‘‘Chartjunk’’ to refer to useless, non-informative, or information-obscuring elements of quantitative information displays.

The main aspect we learnt from Edward Tufte is information perception is an intelligent method to convey quantitative substance outwardly. Data visualisations should be visually appealing, useful, and never misleading. Large information gets pointless if it can't be expended and understood in an important and valuable manner.

But what is it that makes graphical representations so effective? Humans have a significant dependence of their eyesight and, as a result an affinity for visual representations. Remove clutter, above all else we need to show data. We need to erase everything that we don’t need, and we are developing data dissociation or dashboard.

With the improvement of the economy and the development of transportation equipment, more and more people choose to travel. But for some regular tourists and some professionals, the fixed routes in the hot spots can no longer meet their needs. Some of them want to develop their own routes to get closer to nature or to have more flexible schedules, so that is the main purpose of building our site. We are going to create a unique tour route for our users on the Great Barrier Reef in order to give them an unusual travel experience.

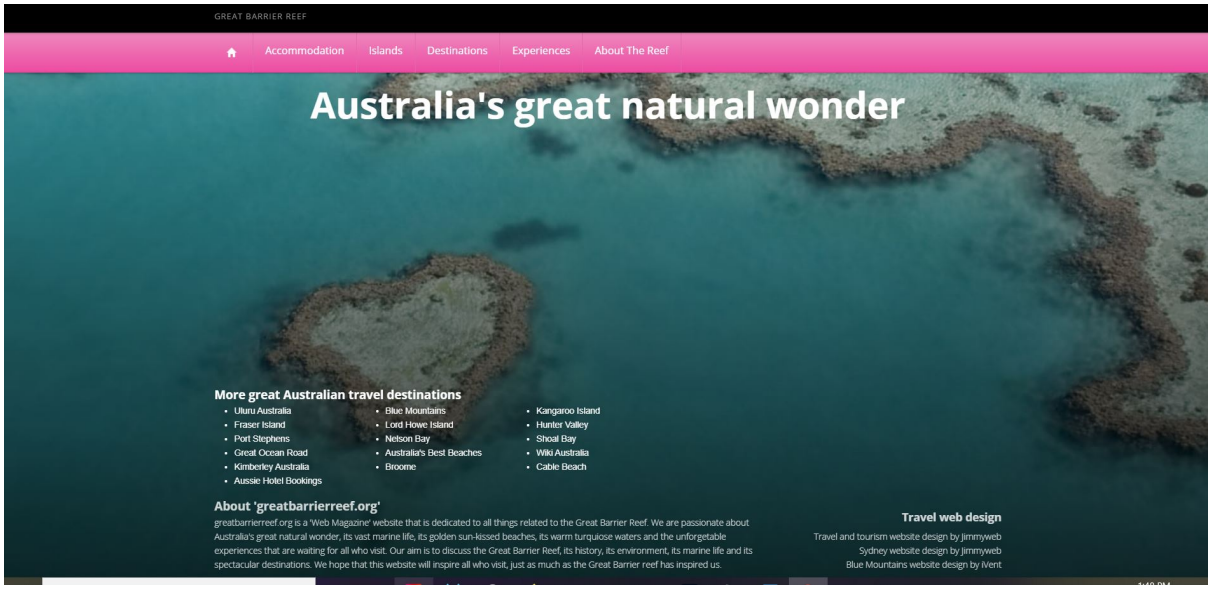
Below is some example of the websites that are good but do not have enough or relevant information that is required by the user.

***A). Great Barrier Reef – Australia’s Great Natural Wonder***

*(https://greatbarrierreef.org/)*

At the bottom of the website, the section that states "More Great Australian Travel Destinations," we have some inspirations that will help us design a floating box on the right side of the home page, which will describe ‘‘more popular spots to see the coral reef’’. The goal is to give users some advice on where to travel. In other parts, accommodation is a impractical part because we are focus on planning a private trip for our users.

In terms of content design, they have designed a separate column called "About the Reef," which is quite useful. By browsing that section of the website, we have gained a lot of knowledge and information about the reef. Also, referencing and modifying that section, we have been able to make users even more aware of the coral reef.




***B). Queensland Government Maritime Safety Queensland***

*(https://www.msq.qld.gov.au/Safety/Personal-watercraft)*

Our website is in full compliance with the navigation regulations of Australia. If users want to apply for their own personal customization, they need to provide relevant proof, such as:

> Hold both a personal watercraft license and recreational marine driver license
>
> Or hold both a personal watercraft license and a commercial marine license as master
>
> Or have a licensed person on board who is able to take immediate control in the case of any trouble. (Queensland Government Maritime Safety Queensland, 2020)

Before the initial trip, the participants need to submit their proof of equipment. For instance, the diagram below shows the requirement for particular water event:

## Safety equipment

The safety equipment required for your PWC depends on where you are.

| Equipment | Smooth waters | Partially smooth waters | Beyond partially smooth waters |
|---|---|---|---|
| **Must carry the following equipment** | | | |
| Lifejacket | ✓ Lifejacket level 50 or level 50 special purpose | ✓ Lifejacket level 50 | ✓ Lifejacket level 50 |
| Signalling device if operating at night (e.g. torch, lantern, glow stick) | ✓ | ✓ | ✓ |
| V sheet | | ✓* | ✓* |
| Flares (2 red hand-held and 2 orange smoke) | | ✓* | ✓* |
| EPIRB or PLB** | | | ✓# |
| **Should carry the following equipment** | | | |
| Anchor | | ✓* (with cable appropriate to size of vessel) | ✓* (with cable appropriate to size of vessel) |
| Drinking water | | ✓* | ✓* |
| Chart | | ✓ | ✓ |
| Compass | | ✓ | ✓ |
| Handheld electronic navigation device (if not equipped with a chart and compass) | | ✓ | ✓ |

*Does not apply to a PWC that is operating in an approved aquatic event or beyond partially smooth waters and within 0.5nm from land.
** If using a Personal Locator Beacon in place of an EPIRB, the PLB must be comply with the usage conditions. See https://www.msq.qld.gov.au/Safety/Distress-signals for detail.
# Required when operating more than 2 nautical miles outside of smooth waters or partially smooth waters or other waters more than 2 nautical miles from land.

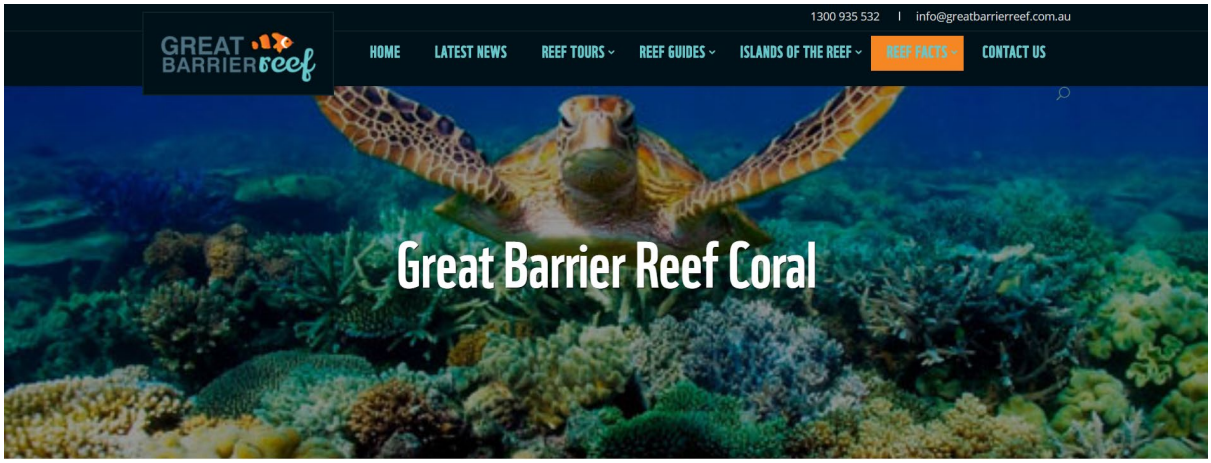
***C). Great Barrier Reef***

*(https://greatbarrierreef.com.au/coral/)*

This website gives me the inspiration for colour collocation and picture selection. The main colours of website are blue and green so that each part is full of the atmosphere of the sea, which perfectly confirms to the theme of travelling in the Great Barrier Reef. When you click on the home page, you will see a picture of coral and marine life combined with a title that perfectly illustrates the type and function of the site.

The page has a floating navigation bar which offers weather conditions (when you hover over weather conditions and click on the icon it will open up a display to the left showing more information), boat routes (static boat route compiled by Queensland Government Maritime Safety Queensland), top 10 coral reef areas (this will show have link to the map and will have more detailed information) and users custom routes (users can plan their route if they follow the guidelines).

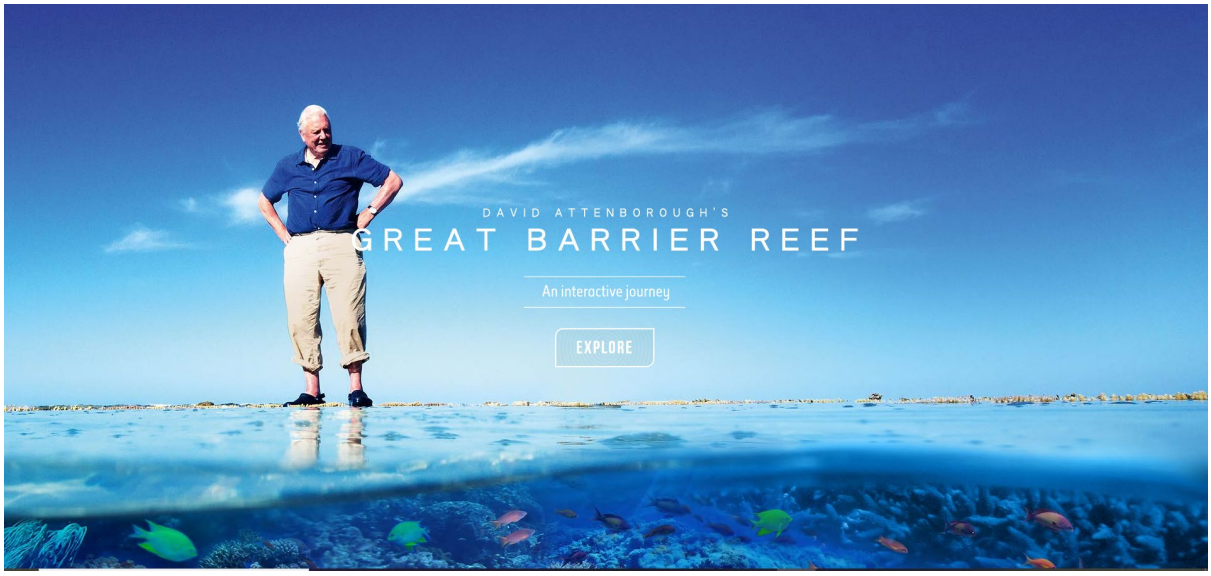
In other ways, the page does not provide users with the ability to choose their own routes. On this page, all travel routes are fixed. It's not consistent with our ultimate goal, but it's useful. We mainly provide customized services. For those who want to follow a fixed and public tour route, this website can help them decide the tour route.

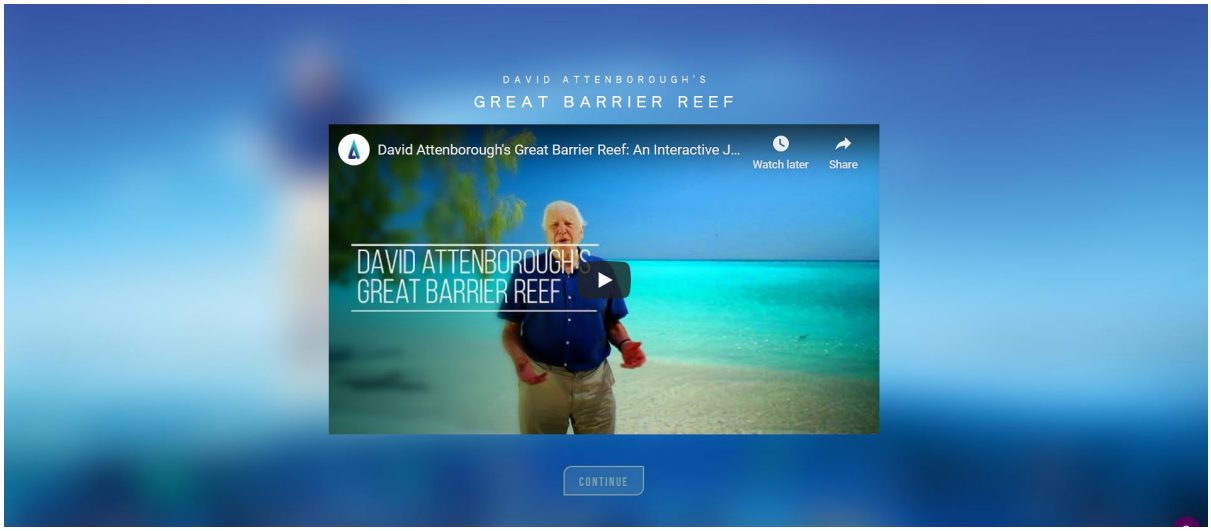


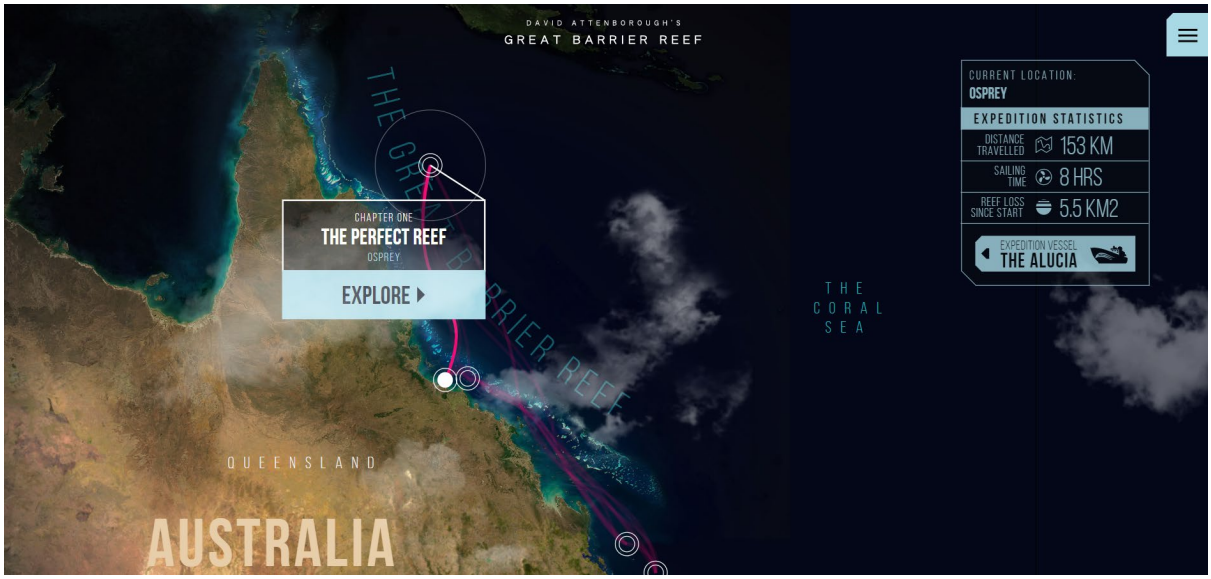

***D). David Attenborough's***

*(https://attenboroughsreef.com/)*

This site is very useful because we get a lot of inspiration from it. For example, one start into animation is enough to attract users to continue to use their web page. After users click on the "EXPLORE" button, it will introduce a video to the Great Barrier Reef. After viewing the video, the users click on the "CONTINUE" button and this will open new interactive page. Users can enter the page to obtain relevant information on the island by clicking on the different location of the button. In this section, we will keep the original part, determine the location of more corals by importing API and set the function of adding the destination to set the travel route easily.



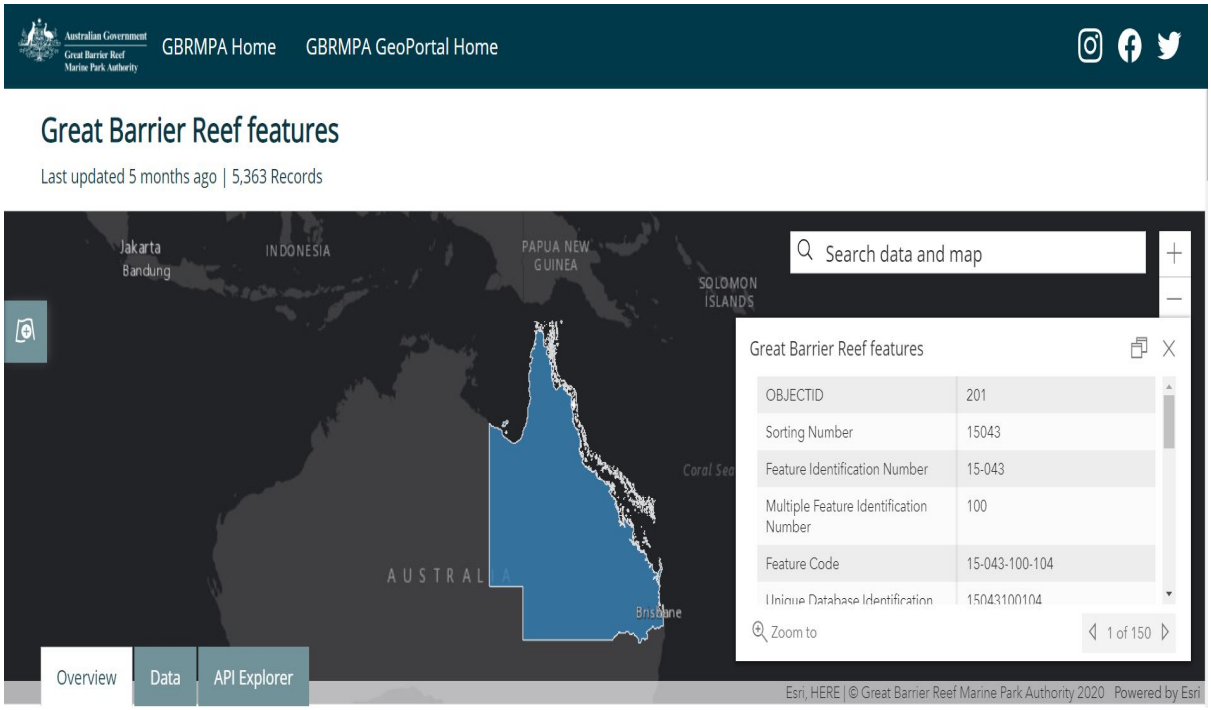



***E). Great Barrier Reef Marine Park Authority.***

*(https://geoportal.gbrmpa.gov.au/datasets/d15db1abb453464e90885e7a4c82c989_0?geometry=81.442%2C-32.406%2C-145.052%2C-3.523)*

We found the GBRMPA Home page website to be very unappealing or not useful. When the user types in the word "Coral Reef" the information provided does not show what the user wants. The data representation did not identify the types of corals and fishes that were in that part of the reef. The information the website provides only data that has no real use for day to day visitors who want to visit coral reefs in Queensland.


Australian Government
Great Barrier Reef Marine Park Authority
GBRMPA Home
GBRMPA GeoPortal Home
Great Barrier Reef features
Last updated 5 months ago | 5,363 Records
Jakarta
Bandung
INDONESIA
PAPUA NEW GUINEA
SOLOMON ISLANDS
Coral Sea
AUSTRALIA
Brisbane
Search data and map
Great Barrier Reef features
OBJECTID 201
Sorting Number 15043
Feature Identification Number 15-043
Multiple Feature Identification Number 100
Feature Code 15-043-100-104
Unique Database Identification 15043100104
Zoom to
1 of 150
Overview
Data
API Explorer
Esri, HERE | © Great Barrier Reef Marine Park Authority 2020 Powered by Esri

# 3.Design Concept

## 3.1 Purpose:

Our purpose and goal? Is to make user-friendly and fun website. Websites today are just cluttered with information that is not relevant to the user. Many websites also have advertising placed all over the site which is very un-appealing and annoying. Everyday users like mum's, dad's, grand-parents and children love websites that are simple, easy navigation and words with no jargon.

These days, having a website is very important. It is virtually apart of our lives since the invention of the first webpage. Even primary schools to high school nowadays use the internet for their structured learning. Therefore, it is important to have a website with the correct information and details, with incorrect or irrelevant details the user will eventually find better website and your business will lose customers.

One principle that will be applied to our website is Hicks Law. Hick's law is often utilized in user experience design. Designers often use the "Keep it Simple, Stupid" principle to avoid overwhelming potential users or website visitors. This is especially important for websites when planning navigation menus. Having too many links makes it difficult to find the category that the user is looking for and discourages them from staying on the website. One way of avoiding this issue, if having many options is necessary for the purpose of the website, is categorizing options. Grouping them together cuts down on the items in the list, making it much easier for the user to find what they are looking for and make a decision faster (Margaret Rose, 2017).

Our website can be as simple as 1 step click, the users clicks on the map on the "Home Page" and it will give the detail information they required about coral reef and other information. If the user wants to travel from their starting point to their preferred coral destination it may take them 4 steps to obtain the required information from our website. Other websites may take 4-8 steps to get to their required information. Users will be frustrated because of the endless clicking and time wasting to get to their required information. Therefore, our goal to make less cluttered, informative, interactive and fun website.

## 3.2 Target audience

The primary purpose of our website is that we help our visitors best allocate their time when they decide to visit the coral reef in the Great Barrier Reef. Our users are divided into two groups.

Our main groups are visitors who want unguided tours. On our website, we provide them with more flexible routes. They can choose where they want to see the coral reef and create their own routes by adding destinations on the website. However, it is not suitable for everyone. There are some limitations to our primary users. For example, all members must have a Scuba Diving License and related professional knowledge, and one member has a personal watercraft license and recreational marine driver license. Another has a

licensed person on board who is able to take immediate control in the case of any trouble. We do not provide a boat, which means tours they need to drive the boat by themselves. For the convenience of our users, we will provide some website links to help our users rent boats and scuba equipment near the attractions.

For other groups, they are not our main target audience. Our private customization does not suit them because they do not have enough experience, or they just choose what they want to do. However, we will provide some links for fixed and popular tour routes that are connected to another website. Users can get more detailed travel information by browsing these websites.

### 3.2.1 Persona

## Chai Choi-sum

"I love water and fish. I have big aquarium and I want to go snorkelling and scuba diving in Australian waters to see reef and fish I also love my wife!"

**Age**: 67
**Occupation**: Retired
**Family**: Married
**Location**: Australia, Perth
**Gender**: Male
**Character**: Carefree

### Personality

Introvert — Extrovert
Thinking — Feeling
Sensing — Intuition
Judging — Perceiving

Loving | Stubborn | Fighter | Conscientiousness | Courageous

### Bio

He comes from poor background but with happy life. Heimmigrated from Asia to Australia 30 years ago as refugees. He has have 3 sisters and 1 brother; he works very hard everyday just to put food on the table. He would go to the beach every day so he understand how the tide works. His dad passed away when he was 12 years old.He is the eldest child in the family and he has to be strong for his mother and his siblings. He studied hard each day so one day he can provide his mum and siblings a better life. He has a bucket list, he wants to achieve these goals while his still alive. He has achieve most of them. His 1st life goal was graduate from university and become Engineer for CPB Contractors. Once he got into firm, he worked hard to become lead engineer after 3 years. His 2nd life goal was to marry my sweetheart whom he met at university, she was his Princess who would one day become his Queen. He gas 5 very beautiful children 4 girls and 1 boy. They all become doctors, lawyers and environmentalist. He is the happiest dad in the whole world with a beautiful wife, loving and caring children. And finally, He was able to go scuba driving all around the world at the age of 50.
His goal is now to live happy and quiet life with my wife and travel around the world with her. He wants the memories to last eternity until they meet in the after-life. Also, his last goal is to catch the biggest tuna in the world and then taste the fresh and delicious meat. That would make my life complete.

### Goals

1. He has reached his goal to retirement. He hopes he can live another 33 years to see his 100 milestones.
2. Love his wife until death do them apart.
3. To see the beautiful underwater world!
4. To be role model for his grand-children.

### Frustrations

1. Old age, wish he could live up to 200 years old.
2. Sharks, h hates sharks because when he goes swimming in the ocean. He always worried that he will get killed by a shark.
3. Wars and terriorism in the world.

### A day in the life

His day starts with me waking up at 4.30 am. Kisses his beloved wife. Quick pray to his God to watch over his wife and children and one day there will be World Peace. Once hs prayer is done, he will go for 1 hour walk at his local park and meet all his local neighbourhood friends and great them with love and happiness. After his wonderful walk, he would take nice dip in his pool and have a swim for 1 hour.

Once he is done, his lovely wife always makes him salmon, poached eggs on toast. Around 10-11 am he would go searching internet for different coral reefs and fishes. Then if I really like it, I will make booking for wife and myself to go on weekend trip scuba diving and snorkelling.

After 3-4 hours of scuba diving and snorkelling, he will go home and will make wonderful sushi or beer battered fish and chips for my family. After dinner, his wife and him will sit at the lounge room and talk about their wonderful life and memories. These are the memories they want to carry with them each night before they go to bed at 9 pm. This is their life each day and they are thankful everyday that they are alive and living well.

## Jerry Brown

*"Be paient and enjoy life."*

**Age**: 50
**Occupation**: Photographer of Australian Geographic
**Location**: Brisbane, QLD
**Gender**: Male

### Personality

Introvert — Extrovert
Thinking — Feeling
Sensing — Intuition
Judging — Perceiving

Gentle | Patient | Helpful | Adventurous | Independent

### Bio

Jerry is a photographer from Brisbane. He likes wild animals, especially birds. So, he enjoys working as a photographer of Australian Geographic.
Most of the time, he prefers to stay outdoors. He goes out for a walk by the river every morning. His favorite time of day is between 6 and 8 a.m., when he can see water birds sunbathing beside the water.
He doesn't like socializing occasions. Except spending time with his family, he prefers to carry his camera out into the wild and tries his luck at photographing rare birds.
He loves to share his photos of birds on Facebook. When he takes photo of a very rare bird, he can't wait to share photos and locations online with other birders.
He hopes his photos will show the beauty of the birds to viewers. Sometimes he donates to bird conservation campaigns.

### Goals

Observe more birds that he hasn't seen before.
Take photos of rare birds as many as possible.
Have an exhibition of his photos.

### Frustrations

Wait at a location where someone saw a rare bird for a week but see nothing.
Bird information websites only provide vague areas where people can see certain species of birds.
Saw a bird he hadn't seen before and took photos but couldn't know what kind of bird it was by searching on google.

### Preferred applications

Facebook | Birddata | National Geographic

### A day in the life

He goes to bed early and wakes up early (around 5:30 am). After having a cup of coffee, he goes out for a walk by the river near his home. The time before the sun fully rises is his favorite part of the day. During the time when the sun rising, water birds sunbathe by the river with their wings spread out. He like to observe the water birds and sometimes he takes camera with him and takes some photos although these water birds are of common species. After he finishes his morning walk, he goes for a pre-planned trip to take photos. He received word that some kinds of rare birds had been seen at several locations and he had planned his route today previously. So, he's off now to try his luck at these locations. He is lucky today and takes photos of a bird which is very rare. But he's not always so lucky to get accurate information. He hopes that there is a handy website for bird lovers.

## 3.3 Data source

We will use four datasets from www.data.gov.au or www.data.qld.gov.au:

1. Great Barrier Reef features from (*https://www.data.gov.au/dataset/ds-gbrmpa-http%3A%2F%2Fgeoportal.gbrmpa.gov.au%2Fdatasets%2Fd15db1abb453464e90885e7a4c82c989_0/details?q=)*
2. Extreme weather events ('hot' days) from (*https://www.data.qld.gov.au/dataset/soe2017-extreme-weather-events-hot-days/resource/2017-indicator-4-1-0-5-1)*
3. Extreme weather events (days with 'very heavy rainfall') from (*https://www.data.qld.gov.au/dataset/soe2017-extreme-weather-events-days-with-very-heavy-rainfall/resource/2017-indicator-4-1-0-6-1)*
4. Storm tide data from (*https://www.data.qld.gov.au/dataset/coastal-data-system-near-real-time-storm-tide-data/resource/7afe7233-fae0-4024-bc98-3a72f05675bd)*

We will use the first one, the Great Barrier Reef features dataset, as the main dataset. As the screenshot below, most data in this resource is too academic so that they are redundant for most visitors. We will only use five fields for information popup. They are Great Barrier Reef name (GBR_NAME in data resource), feature name (FEAT_NAME), area of the reef in hectares (Area_HA), longitude (X_COORD) and latitude (Y_COORD). Once the users click on the map, the nearest reef information with these five fields will be displayed. Users can choose their preferred spots based on these fields of knowledge.

| FID | SORT_GBF | LABEL_ID | SUB_NO | CODE | UNIQUE_I | FEATURE_ | GBR_NAM | FEAT_NAM | QLD_NAM | X_LABEL | GBR_ID | LOC_NAM | LOC_NAM | X_COORD | Y_COORD | Area_HA | GlobalID | SHAPE_Le | SHAPE_Area |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 21752 | 21-752 | 100 | 21-752-10 | 2.18E+10 | 104 | U/N Reef | Reef | | 21-1221S | 21752 | U/N Reef ( | U/N Reef ( | 152.3432 | -21.9199 | 20.02624 | {82192109 | 0.016461 | 1.74E-05 |
| 2 | 99416 | 99-416 | 100 | 99-416-10 | 9.94E+10 | 104 | U/N Reef | Reef | | 10-1053S | 99416 | U/N Reef ( | U/N Reef ( | 142.1942 | -10.4215 | 3554.084 | {701F9D1S | 0.33844 | 0.002917 |
| 3 | 21118 | 21-118 | 100 | 21-118-10 | 2.11E+10 | 104 | U/N Reef | Reef | U/N Reef | 21-118S | 21118 | U/N Reef ( | U/N Reef ( | 151.2748 | -21.2016 | 458.8209 | {53938111 | 0.078906 | 0.000397 |
| 4 | 99497 | 99-497 | 100 | 99-497-10 | 9.95E+10 | 104 | U/N Reef | Reef | U/N Reef | 10-1134S | 99497 | U/N Reef ( | U/N Reef ( | 142.6127 | -10.6097 | 101.3304 | {513DD3E( | 0.074427 | 8.33E-05 |
| 5 | 25004 | 25-004 | 100 | 25-004-10 | 2.5E+10 | 102 | Little Woo | Island | Little Woo | 25-1014S | 25004 | Little Woo | Little Woo | 153.02 | -25.3188 | | {F9CDC10( | 0.024993 | 1.22E-05 |
| 6 | 12100 | 12-100 | 100 | 12-100-10 | 1.21E+10 | 103 | U/N Cay | Cay | U/N Cay | 12-100S | 12100 | U/N Cay (1 | U/N Cay (1 | 143.6962 | -12.7812 | | {F65D821( | 0.009297 | 5.58E-06 |
| 7 | 99509 | 99-509 | 100 | 99-509-10 | 9.95E+10 | 104 | U/N Reef | Reef | | 10-1124S | 99509 | U/N Reef ( | U/N Reef ( | 143.4717 | -10.6241 | 36.37208 | {F6E937D6 | 0.020788 | 3.00E-05 |
| 8 | 20284 | 20-284 | 100 | 20-284-10 | 2.03E+10 | 104 | Hesket Ree | Reef | U/N Reef | 20-284S | 20284 | Hesket Ree | Hesket Ree | 149.4813 | -20.9356 | 8.013739 | {7BBD3CF4 | 0.01559 | 6.95E-06 |
| 9 | 99439 | 99-439 | 100 | 99-439-10 | 9.94E+10 | 104 | Alert Patch | Reef | Alert Patch | 10-1046S | 99439 | Alert Patch | Alert Patch | 142.3536 | -10.485 | 415.1164 | {B0E6161E | 0.098751 | 0.000341 |
| 10 | 20153 | 20-153 | 100 | 20-153-10 | 2.02E+10 | 104 | U/N Reef | Reef | U/N Reef | 20-153S | 20153 | U/N Reef ( | U/N Reef ( | 150.5124 | -20.095 | 36.73548 | {A6800DA( | 0.025789 | 3.16E-05 |
| 11 | 23033 | 23-033c | 103 | 23-033-10 | 2.3E+10 | 108 | Egg Rock ( | Rock | Egg Rock | 23-033B | 23033C | Egg Rock ( | Egg Rock ( | 151.1017 | -23.198 | | {061F58D7 | 0.002557 | 4.56E-07 |
| 12 | 12029 | 12-029 | 100 | 12-029-10 | 1.2E+10 | 104 | U/N Reef | Reef | U/N Reef | 12-029S | 12029 | U/N Reef ( | U/N Reef ( | 143.9106 | -11.9964 | 12.56314 | {E6BC056; | 0.012683 | 1.04E-05 |
| 13 | 22846 | 22-846 | 100 | 22-846-10 | 2.28E+10 | 104 | U/N Reef | Reef | U/N Reef | 22-1020S | 22846 | U/N Reef ( | U/N Reef ( | 152.5716 | -22.1134 | 7.328857 | {0A1CF34( | 0.010569 | 6.37E-06 |
| 14 | 20060 | 20-060h | 108 | 20-060-10 | 2.01E+10 | 104 | Long Islan | Reef | U/N Reef | 20-060H | 20060H | Long Islan | Long Islan | 148.8557 | -20.325 | 2.073936 | {CEA346E4 | 0.009253 | 1.79E-06 |
| 15 | 21124 | 21-124 | 100 | 21-124-10 | 2.11E+10 | 104 | U/N Reef | Reef | U/N Reef | 21-124S | 21124 | U/N Reef ( | U/N Reef ( | 151.128 | -21.2571 | 532.7761 | {825B38D9 | 0.08606 | 0.000462 |
| 16 | 11134 | 11-134 | 100 | 11-134-10 | 1.11E+10 | 102 | Pirie Islet | Island | Pirie Islet | 11-134S | 11134 | Pirie Islet ( | Pirie Islet ( | 142.8988 | -11.5884 | | {8B8C001( | 0.015407 | 4.46E-06 |
| 17 | 19061 | 19-061 | 100 | 19-061-10 | 1.91E+10 | 104 | Jacqueline | Reef | Jacqueline | 19-061S | 19061 | Jacqueline | Jacqueline | 148.9038 | -19.2139 | 579.7361 | {F6A9DE1; | 0.101113 | 0.000498 |
| 18 | 21254 | 21-254 | 100 | 21-254-10 | 2.13E+10 | 104 | U/N Reef | Reef | U/N Reef | 21-254S | 21254 | U/N Reef ( | U/N Reef ( | 152.3474 | -21.3508 | 186.7297 | {2CF6346E | 0.07735 | 0.000161 |
| 19 | 11133 | 11-133 | 100 | 11-133-10 | 1.11E+10 | 104 | U/N Reef | Reef | U/N Reef | 11-133S | 11133 | U/N Reef ( | U/N Reef ( | 142.8438 | -11.5637 | 508.955 | {B9524B0( | 0.11618 | 0.00042 |
| 20 | 22136 | 22-136 | 100 | 22-136-10 | 2.21E+10 | 103 | U/N Cay | Cay | U/N Cay | 22-136S | 22136 | U/N Cay (2 | U/N Cay (2 | 152.6489 | -22.2488 | | {006500F4 | 0.007292 | 3.80E-06 |
| 21 | 21529 | 21-529 | 100 | 21-529-10 | 2.15E+10 | 104 | U/N Reef | Reef | U/N Reef | 21-529S | 21529 | U/N Reef ( | U/N Reef ( | 152.173 | -21.8669 | 672.1661 | {9AAC9A4; | 0.101136 | 0.000584 |
| 22 | 23810 | 23-810 | 100 | 23-810-10 | 2.38E+10 | 102 | Compigne | Island | Compigne | 23-810S | 23810 | Compigne | Compigne | 151.2585 | -23.7858 | | {CE35DBA( | 0.033676 | 4.82E-05 |
| 23 | 19180 | 19-180 | 100 | 19-180-10 | 1.92E+10 | 104 | Gargoyle F | Reef | Gargoyle F | 19-180S | 19180 | Gargoyle F | Gargoyle F | 149.6834 | -19.7409 | 541.1358 | {88790A4E | 0.092014 | 0.000466 |
| 24 | 99402 | 99-402 | 100 | 99-402-10 | 9.94E+10 | 104 | U/N Reef | Reef | | 10-1001S | 99402 | U/N Reef ( | U/N Reef ( | 143.9322 | -10.374 | 26.88274 | {F42BFBD( | 0.020015 | 2.21E-05 |
| 25 | 21423 | 21-423c | 103 | 21-423-10 | 2.14E+10 | 102 | Eagle Islet | Island | Eagle Islet | 21-423C | 21423C | Eagle Islet | Eagle Islet | 150.1948 | -21.978 | | {ABAA082( | 0.004283 | 1.10E-06 |
| 26 | 21603 | 21-603 | 100 | 21-603-10 | 2.16E+10 | 104 | U/N Reef | Reef | | 21-1057S | 21603 | U/N Reef ( | U/N Reef ( | 151.6062 | -21.2605 | 26.30616 | {72BD17E: | 0.017411 | 2.28E-05 |
| 27 | 11051 | 11-051 | 100 | 11-051-10 | 1.11E+10 | 104 | U/N Reef | Reef | U/N Reef | 11-051S | 11051 | U/N Reef ( | U/N Reef ( | 143.0732 | -11.3705 | 16.22602 | {29540923 | 0.01417 | 1.34E-05 |
| 28 | 20814 | 20-814 | 100 | 20-814-10 | 2.08E+10 | 106 | U/N Rock | Rock | U/N Rock | 20-814S | 20814 | U/N Rock | U/N Rock | 148.5057 | -20.0781 | | {AE960C2( | 0.002879 | 3.09E-07 |
| 29 | 20069 | 20-069 | 100 | 20-069-10 | 2.01E+10 | 106 | U/N Rock | Rock | U/N Rock | 20-069S | 20069 | U/N Rock | U/N Rock | 149.114 | -20.1941 | | {7414430E | 0.001395 | 9.85E-08 |
| 30 | 18101 | 18-101 | 100 | 18-101-10 | 1.81E+10 | 104 | Judith Wri | Reef | Judith Wri | 18-101S | 18101 | Judith Wri | Judith Wri | 147.9513 | -18.8997 | 3964.614 | {1737C4B1 | 0.234648 | 0.003402 |
| 31 | 21345 | 21-345 | 100 | 21-345-10 | 2.13E+10 | 104 | Ridge Reef | Reef | U/N Reef | 21-345S | 21345 | Ridge Reef | Ridge Reef | 149.6382 | -21.6748 | 15.46106 | {606F992A | 0.028785 | 1.35E-05 |
| 32 | 16026 | 16-026 | 100 | 16-026-10 | 1.6E+10 | 104 | Tongue Re | Reef | Tongue Re | 16-026S | 16026 | Tongue Re | Tongue Re | 145.7926 | -16.3209 | 26007.88 | {82A2474S | 0.757126 | 0.022001 |
| 33 | 99516 | 99-516 | 100 | 99-516-10 | 9.95E+10 | 102 | Murangi Is | Island | Murangi Is | 10-1028S | 99516 | Murangi Is | Murangi Is | 142.4927 | -10.6954 | | {21EFB2C( | 0.006018 | 2.13E-06 |

However, we keep the other data in the background for the searching function. The searching function is designed for professional visitors. They can locate their destination by the Great Barrier Reef ID or the unique ID by using the main search bar; they can type in the latitude and longitude range to look for all the reefs between, they can also search for the specific reef type by the drop-down list. If users want to use the search function, the result will be highlighted on the map. They can click on each point to check the detailed information.

The other three data resources are used for weather alert, which is feature on our website. We statistically use the data to predict dangerous weather at the affected area and recommend users not visiting some places during that time. Therefore, users can make the plans properly for their holidays to reduce the loss of time and money due to their unfamiliarity with the climate.

Since the first two of these three are similar, we will realize the function in a similar way. We will highlight the high-risk spots of high temperatures in summer and those of heavy rains in the monsoon season to ask users to avoid those places if possible. We will also remind users to double-check the weather forecast on the day of their trip. The images below are the datasets of extreme weather events ('hot' days) and extreme weather events (days with 'very heavy rainfall').

| Name | Measure | 1910 | 1911 | 1912 | 1913 | 1914 | 1915 | 1916 | 1917 | 1918 | 1919 | 1920 | 1921 | 1922 | 1923 | 1924 | 1925 | 1926 | 1927 | 1928 | 1929 | 1930 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cairns Airp | Actual | 1 | 1 | 2 | 1 | 5 | 6 | 2 | 0 | 4 | 1 | 0 | 0 | 2 | 8 | 9 | 1 | 0 | 6 | 0 | | |
| Cairns Airp | Moving average | | | | | | | | | | 2.3 | 2.2 | 2.1 | 2.1 | 2.8 | 3.2 | 2.7 | 2.5 | 3.1 | 2.7 | | |
| Mackay | Actual | | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| Mackay | Moving average | | | | | | | | | | 0.2 | 0.2 | 0.2 | | | | | | | | | |
| Longreach | Actual | 85 | 107 | 145 | 99 | 159 | 167 | 111 | 61 | 91 | | 108 | 88 | 143 | 167 | 98 | 130 | 167 | 131 | 151 | 141 | 107 |
| Longreach | Moving average | | | | | | | | | | | | | | | | | | | | 132.4 | 132.3 |
| Boulia | Actual | 95 | 116 | | | | | 97 | 102 | 117 | 153 | | 107 | 163 | 151 | 128 | 150 | 157 | 141 | 170 | 131 | 139 |
| Boulia | Moving average | | | | | | | | | | | | | | | | | | | | 144.2222 | 143.7 |
| Birdsville A | Actual | | | | | | | | | | | | | | | | | | | | | |
| Birdsville A | Moving average | | | | | | | | | | | | | | | | | | | | | |
| Charleville | Actual | | | | | | 85 | 55 | 88 | | | 54 | 29 | 66 | 83 | 23 | 52 | 91 | 54 | 68 | 82 | 47 |
| Charleville | Moving average | | | | | | | | | | | | | | | | | | | | 60.2 | 59.5 |
| Gayndah A | Actual | | 23 | 16 | 19 | 20 | | | | 21 | | 13 | 12 | | | 13 | 22 | | 2 | | 37 | 9 |
| Gayndah A | Moving average | | | | | | | | | | | | | | | | | | | | | |
| Brisbane A | Actual | | | | | | | | | | | | | | | | | | | | | |
| Brisbane A | Moving average | | | | | | | | | | | | | | | | | | | | | |

| Name | Measure | 1900 | 1901 | 1902 | 1903 | 1904 | 1905 | 1906 | 1907 | 1908 | 1909 | 1910 | 1911 | 1912 | 1913 | 1914 | 1915 | 1916 | 1917 | 1918 | 1919 | 1920 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South Mos | Actual | | | | | | | | | | | | | 17 | | | 7 | 20 | 21 | 12 | 13 | 23 |
| South Mos | Moving average | | | | | | | | | | | | | | | | | | | | | |
| Palmerville | Actual | 5 | 5 | | 18 | 12 | 3 | 14 | 12 | 12 | 10 | 20 | 14 | 8 | 26 | 9 | 7 | 9 | 11 | 8 | 4 | 8 |
| Palmerville | Moving av | | | | | | | | | | 10.11111 | 11.77778 | 12.77778 | 12.3 | 13.1 | 12.8 | 13.2 | 12.7 | 12.6 | 12.2 | 11.6 | 10.4 |
| Burketowr | Actual | 4 | 7 | 1 | 10 | 9 | 1 | 4 | 9 | 5 | 6 | 6 | 5 | 4 | 5 | 5 | 3 | 10 | 6 | 5 | 10 | 10 |
| Burketowr | Moving av | | | | | | | | | | 5.6 | 5.8 | 5.6 | 5.9 | 5.4 | 5 | 5.2 | 5.8 | 5.5 | 5.5 | 5.9 | 6.3 |
| Barcaldine | Actual | 4 | 2 | 3 | 3 | 3 | 0 | 7 | 4 | 5 | 2 | 8 | 4 | 6 | 7 | 4 | 0 | 9 | 8 | 7 | 2 | 2 |
| Barcaldine | Moving av | | | | | | | | | | 3.3 | 3.7 | 3.9 | 4.2 | 4.6 | 4.7 | 4.7 | 4.9 | 5.3 | 5.5 | 5.5 | 4.9 |
| Birdsville P | Actual | 0 | 0 | 1 | 3 | 4 | 0 | 1 | 5 | 2 | 0 | 2 | 2 | 1 | 0 | 1 | 0 | 6 | | | | 3 |
| Birdsville P | Moving av | | | | | | | | | | 1.6 | 1.8 | 2 | 2 | 1.7 | 1.4 | 1.4 | 1.9 | | | | |
| Cunnamull | Actual | 1 | 2 | 0 | | 2 | 2 | 4 | 0 | 3 | 3 | 0 | 1 | 0 | 3 | 2 | 0 | 2 | 2 | 2 | 1 | 4 |
| Cunnamull | Moving av | | | | | | | | | | | | | 1.666667 | 1.8 | 1.8 | 1.6 | 1.4 | 1.6 | 1.5 | 1.3 | 1.7 |
| Fairymead | Actual | | | | | | | | | | | 9 | 16 | 9 | 13 | 6 | 5 | 12 | 14 | 11 | 4 | 11 |
| Fairymead | Moving av | | | | | | | | | | | | | | | | | | | | 9.9 | 10.1 |
| University | Actual | 6 | 4 | 6 | 7 | 4 | 7 | 11 | | 7 | 5 | 9 | 3 | 9 | 3 | 6 | 1 | 3 | 9 | 5 | 2 | 5 |
| University | Moving av | | | | | | | | | | | | | | | | | | 5.5 | 5.3 | 5 | 4.6 |

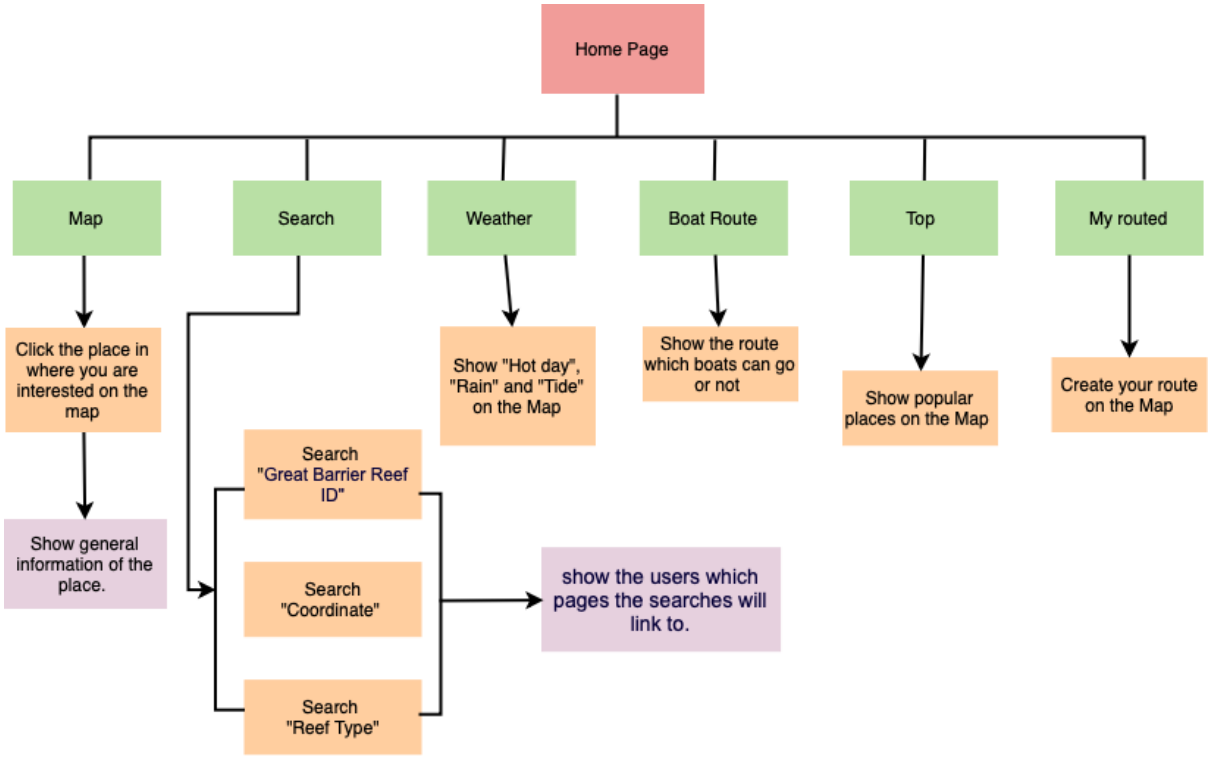
The third dataset, shown in the image below, is about the storm tide in the past seven days. This data contains the longitude and latitude information. Thus, it is more accurate to predict the water level, and we can make a layer-tinted map according to it. The users can use the data to decide whether to start a trip recently or not.

| Tide Data | provided @ 12:25hrs on 20-09-2020 | | | | | | |
|---|---|---|---|---|---|---|---|
| Site | Seconds | DateTime | Water Lev | Prediction | Residual | Latitude | Longitude |
| abellpoint | 1.6E+09 | 2020-09-1 | 1.366 | 1.15 | 0.216 | -20.2608 | 148.7103 |
| abellpoint | 1.6E+09 | 2020-09-1 | 1.326 | 1.094 | 0.232 | -20.2608 | 148.7103 |
| abellpoint | 1.6E+09 | 2020-09-1 | 1.243 | 1.043 | 0.2 | -20.2608 | 148.7103 |
| abellpoint | 1.6E+09 | 2020-09-1 | 1.193 | 0.998 | 0.195 | -20.2608 | 148.7103 |
| abellpoint | 1.6E+09 | 2020-09-1 | 1.16 | 0.959 | 0.201 | -20.2608 | 148.7103 |
| abellpoint | 1.6E+09 | 2020-09-1 | 1.124 | 0.923 | 0.201 | -20.2608 | 148.7103 |
| abellpoint | 1.6E+09 | 2020-09-1 | 1.078 | 0.892 | 0.186 | -20.2608 | 148.7103 |
| abellpoint | 1.6E+09 | 2020-09-1 | 1.041 | 0.866 | 0.175 | -20.2608 | 148.7103 |
| abellpoint | 1.6E+09 | 2020-09-1 | 1.006 | 0.844 | 0.162 | -20.2608 | 148.7103 |
| abellpoint | 1.6E+09 | 2020-09-1 | 1.013 | 0.829 | 0.184 | -20.2608 | 148.7103 |

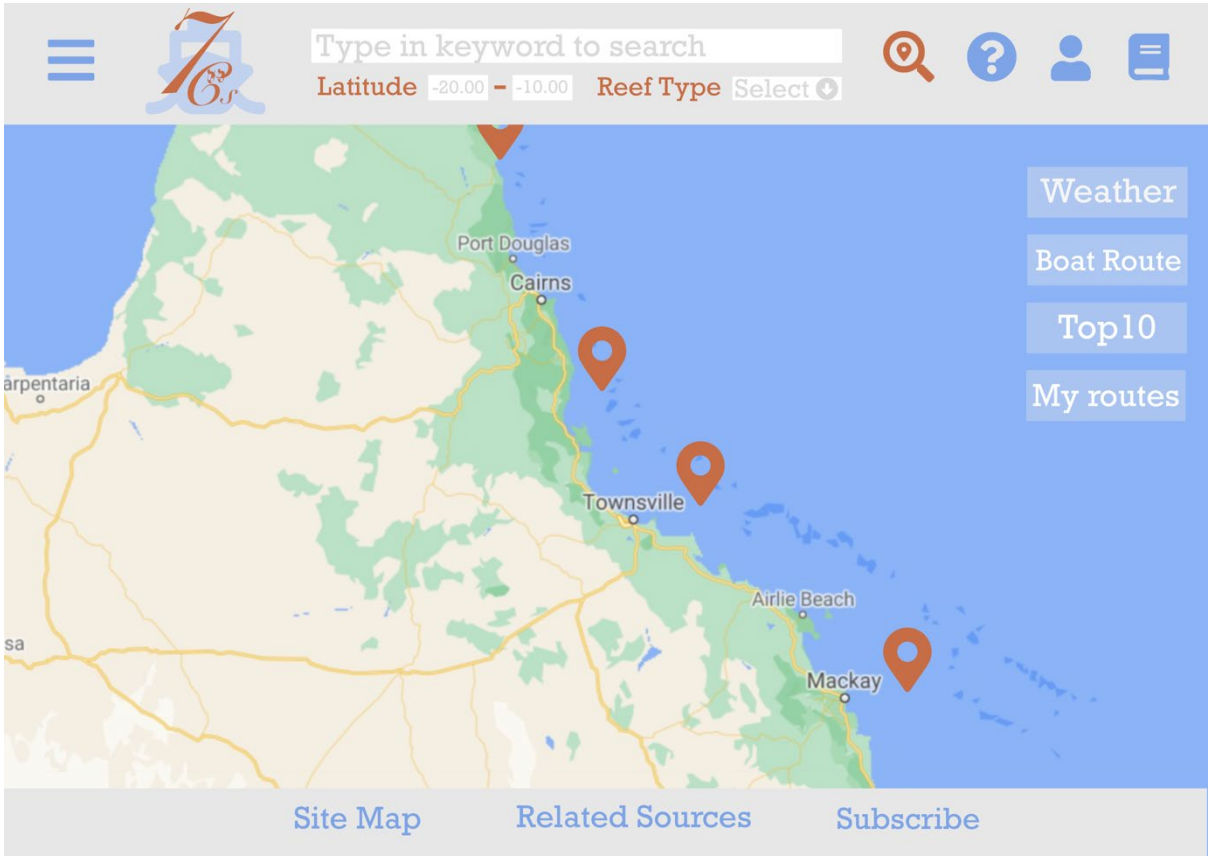
We will set up the website information system to record the login users' information. They can "like" or "add" the spots for their design for individual routines. For personal function, after adding all the reef they want to visit, they can get their routine according to the spots sorted by longitude and latitude. We will use the data and sort them by added most to least and give the information of the top 10 popular reefs.

## 3.4 Interactivity

### 3.4.1 Task Flow

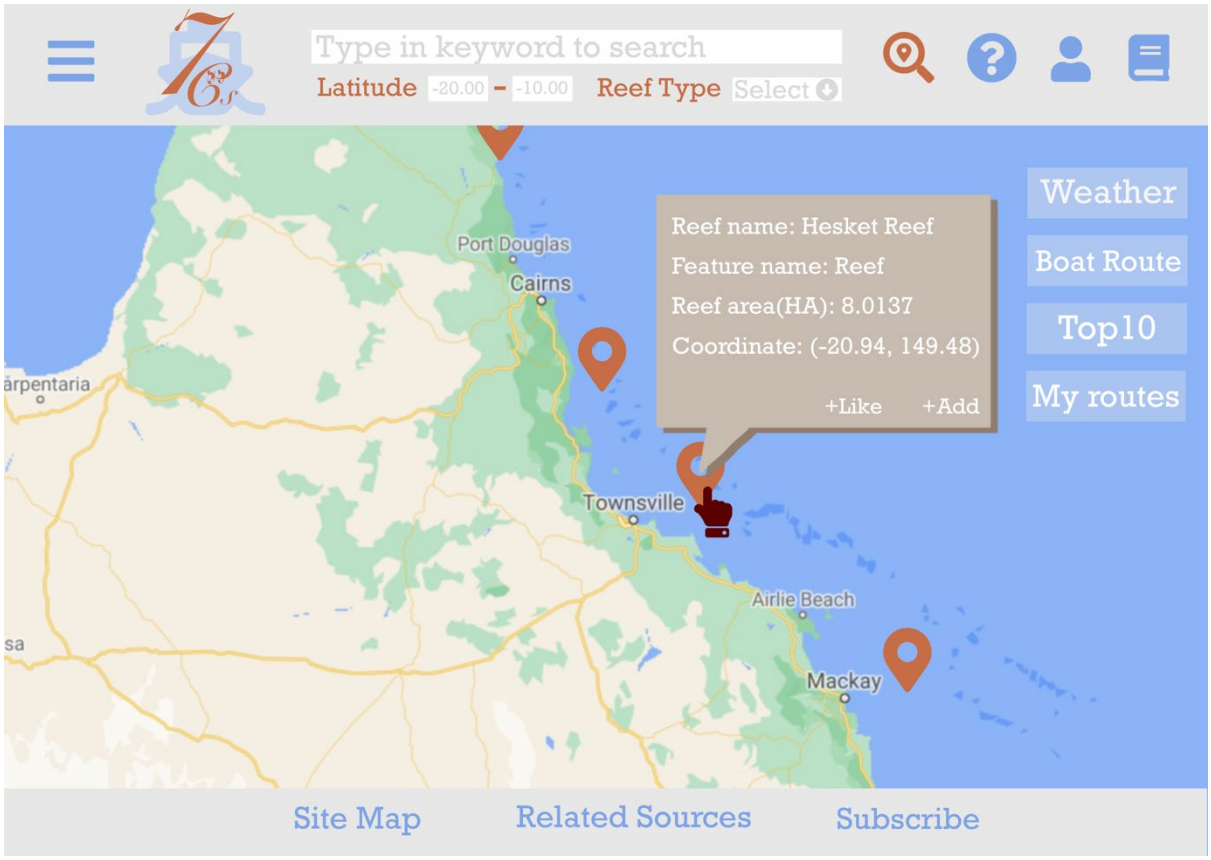


### 3.4.2 Sketches



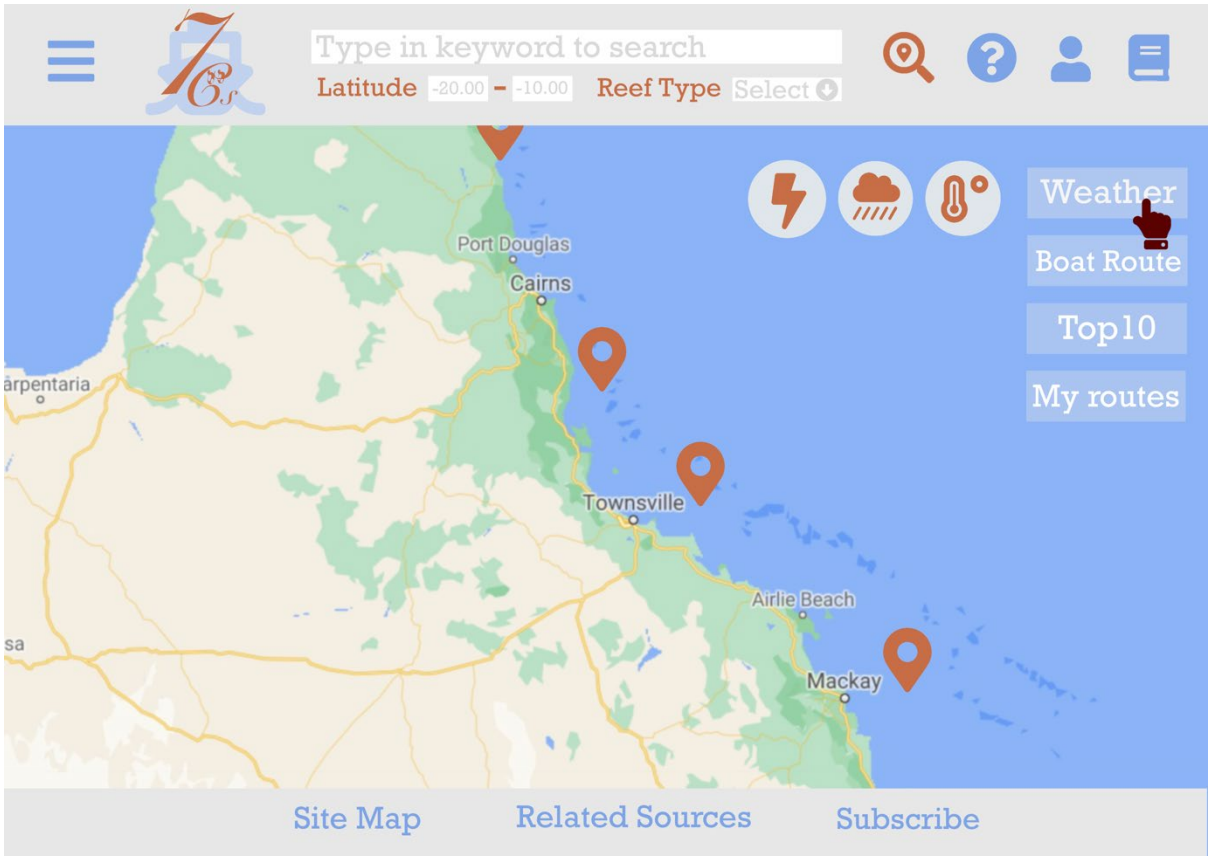

***1.The homepage of the website – View the positions of reefs and search:***

All the main functions are on this page in order to make the website easy to use. The main function of the website is showing the position of reefs and users can search reefs by unique reef ID, latitude and reef type. Usually, reef ID and reef type are for users who have academic knowledge of reefs. Common users search by latitude or just find reefs directly on the map.
There are other important functions on this page. "Weather" means extreme weather. Users can see areas with extreme weather on the map so that they can avoid dangerous areas and adjust their plan. "Boat Route" means the shipping areas. Users can check whether the area allows ship to go or not. "Top 10" means the top 10 popular reefs and it depends on how much times users add the reefs to their routes. Users can check the top 10 popular reefs and plan their trip based on it. "My routes" means users' own routes. They can add reefs to their routes and show the routes on the map directly.



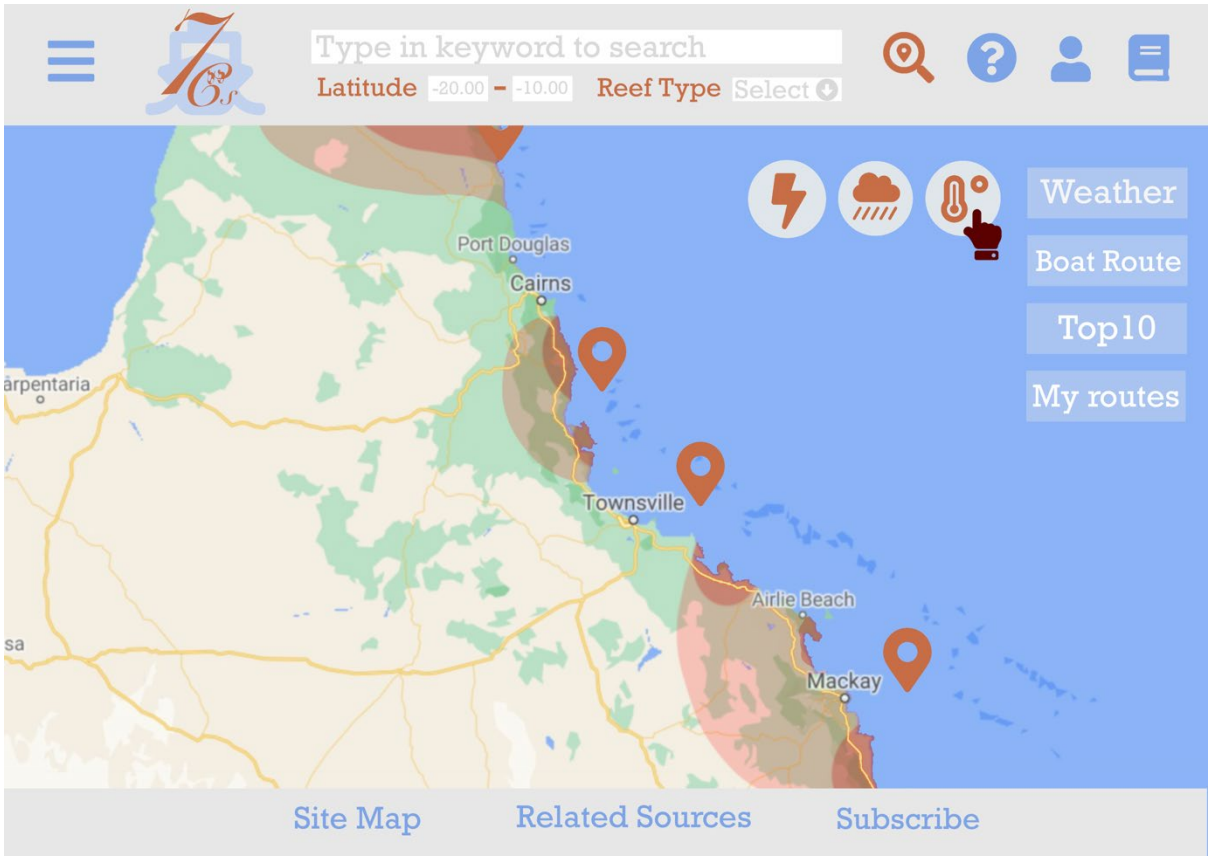

***2. Clicking the points on the map – View information / Create routes / Add like list:***

The website shows the positions of reefs on the map. Users can zoom the map to look for reefs. They can also click on the orange point and view the detailed information of the reef. After the user clicks on the orange point, he can click "Add" to add this point to his route and click on "Like" to add this point to his like list. After the user add/ like this reef, the button turns to delete/ unlike. After the user add more than 1 reefs to his routes, these reefs will link together and form a route automatically.



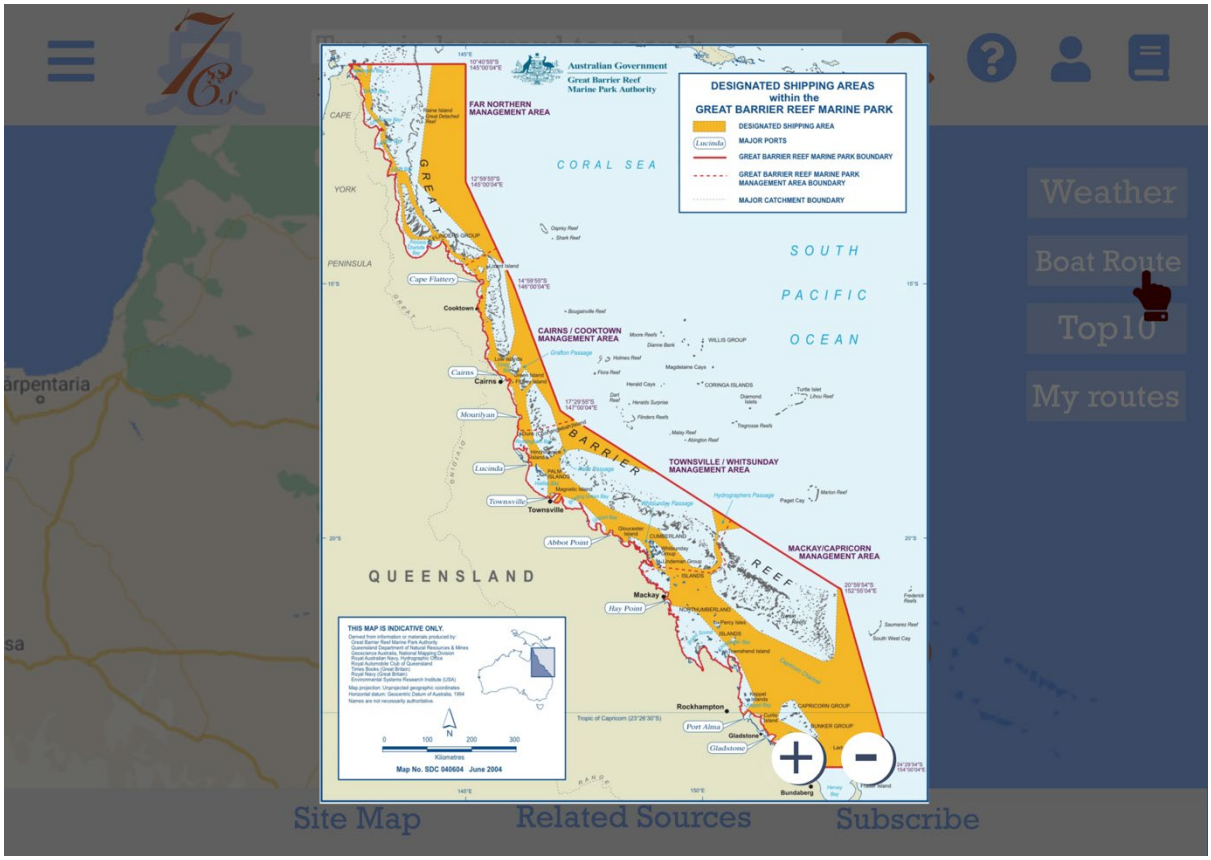

***3. Clicking the "weather" button – View areas with extreme weather:***

Users can check areas with extreme weather by clicking the "Weather" button. After the user clicks the "Weather" button. Three small buttons show on the left. The lightening symbol means water level, the second button means heavy rainfall and the third button means high temperature. The user can click on these three buttons to show the areas with different kind of extreme weather and consider their trip plan based on the result.



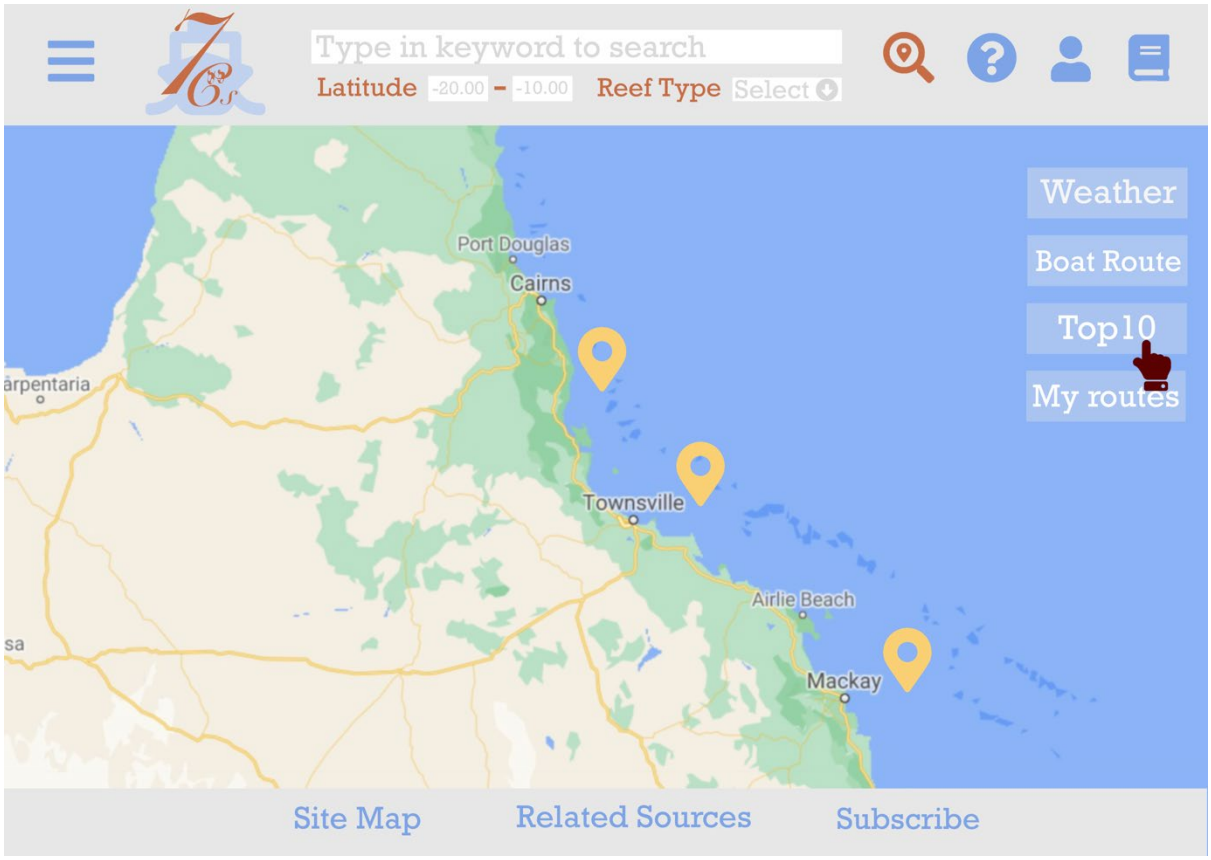

***4. Clicking small buttons of extreme weather – Areas with extreme weather show on the map:***

Users can choose which kind of extreme weather that they care about. If the user clicks on the third button, which means high temperature, the hottest areas will show on the map with red colour. Similarly, if the user clicks on the first button, which means water level, the areas with highest water level will show on the map and if the user clicks on the second button, which means heavy rainfall, the areas with most rainy days will show on the map. The website will use different colour to represent different kinds of extreme weather and users can view areas with different extreme weather at the same time.



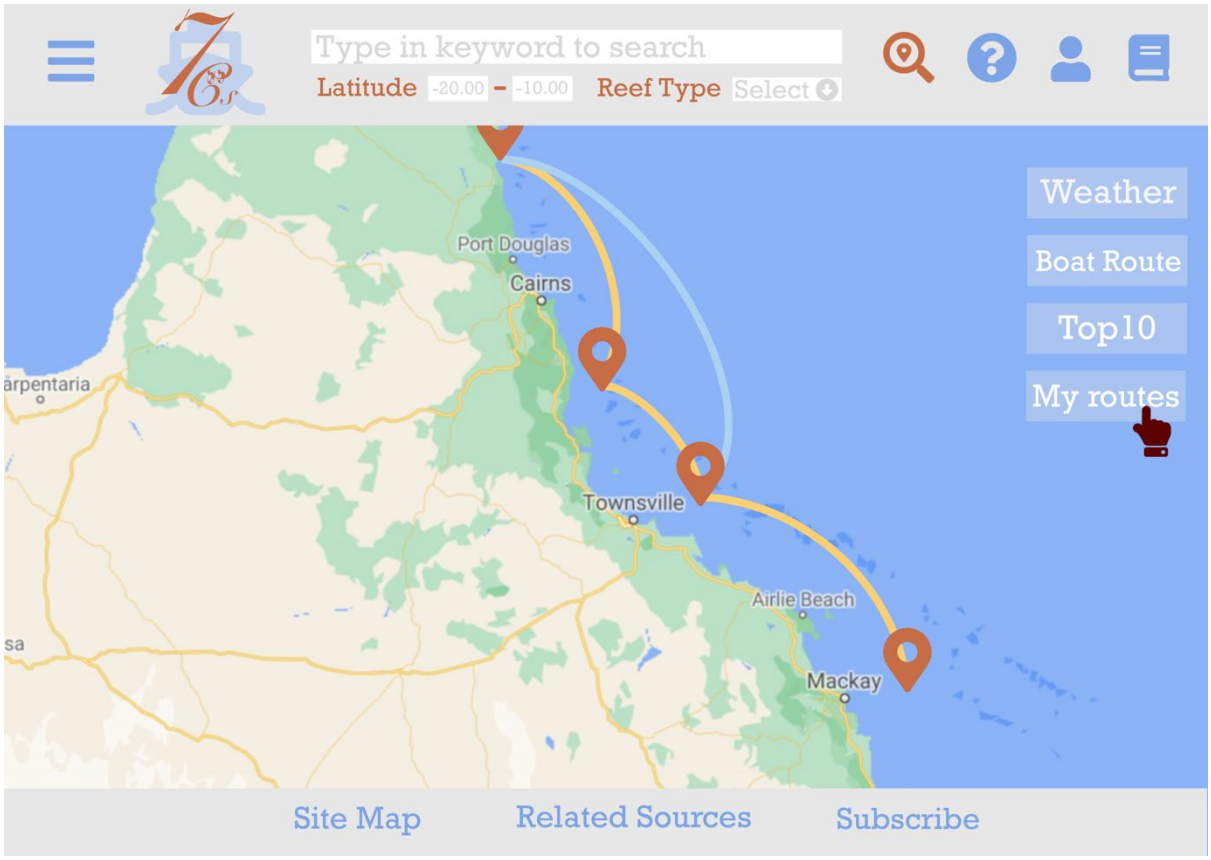

***5.Clicking the "Boat Route" button – View areas that boats can go or cannot go:***

Users can click the "Boat Route" button to view the areas that boats can go or cannot go so that if some users want to plan their own routes and drive boats to see the reefs, they can check and avoid the areas that boats cannot go. We found a dataset which shows the shipping areas on the map, but it cannot work properly. So, we put a map directly on the website and users can view the map by clicking the "Boat Route" button. If the problem of the dataset is fixed, we will use that dataset instead of the map, and the shipping areas will show on the map with different colour in the same way as areas with extreme weather.



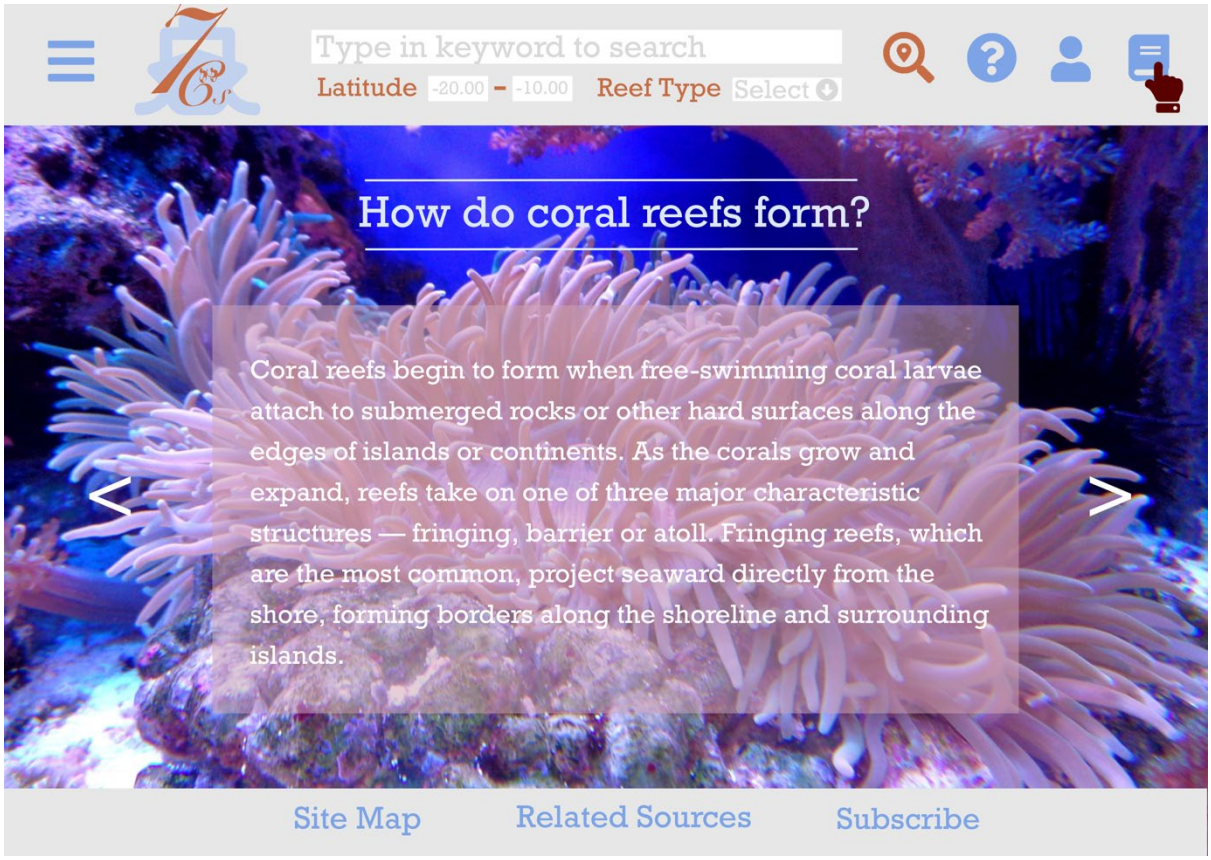

***6.Clicking the "TOP10" button – View the most popular reefs on the map:***

After the user logs in, he can add reefs to his own routes. We will collect the data that how many times that every reef has been added. So that we can sort these data and get the most popular reefs.
After the user click the "TOP10" button, only the 10 reefs who has been added the most time will remain on the map and others will hide. The most popular reefs are highlighted by yellow colour. This function is designed for those who do not have much experience with barrier reefs. They can view the detailed information of the most popular reefs and add them to their own routes in an easy way.




***7.Clicking the "My routes" button - View the routes created by users their own:***

After the user adds more than 1 point to his route, the points on the map will link together automatically and form a line, no matter how many points the user adds to his route and in what order the user adds these points. The user can create more than 1 route on the map and different routes have different colours. The user can hide the routes by clicking the "My routes" again. So, to create routes and save routes, the user needs to register and log in the website.




***8. Clicking the book icon – View guides and related knowledge:***

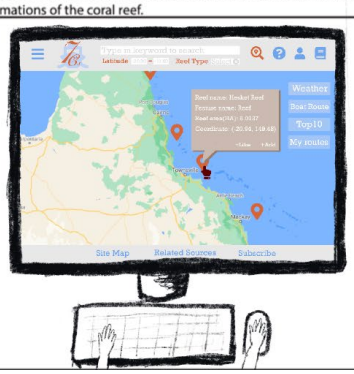
There will be some guides, introductions and interesting knowledge about reefs and corals on the website. After the user clicks the book icon, he will see this information page. This page is for those people who do not have much related knowledge. After the user creates his routes, he can view the information on this page and know more about reefs and corals before his trip.

There will also be links of other useful websites related to reefs and corals in "Related Sources" page. After the user clicks the "Related Sources" on the foot navigation bar, he will see the related websites and explore them.

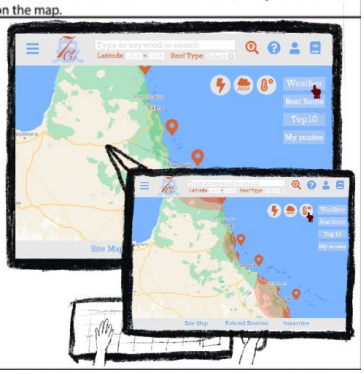
### 3.4.3 Storyboard

1. Alex has a lot of experiences about the coral reef. She plans to travel in QLD to find unique the reef types. She searces a website which can find specifc coral reef and location.


2. She Finds 7C's website, and try ti explore the website. Home page of the website shows some places with brief information on QLD map. Then, she clicks a location in where she is interested and check the informations of the coral reef.

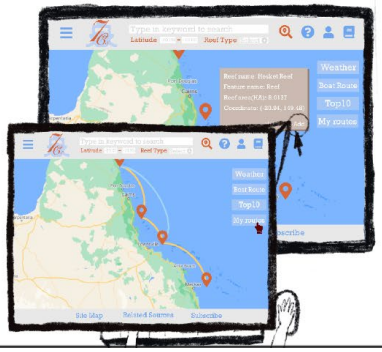



3. Then, She clicks "Weather" before she create her routes because she need to check the location of the weather to avoid bad weather. In the website, it shows most where is most hot, heavy rain and tide on the map.




4. After checking weather, she want to check boat route to check where boats can go or not. The website shows a specific map which explains exact detail of the boat route in QLD.


5. Then, she clicks the place on the map, and click add the place as her route. After, adding all the places, she can check her routes by clicking "My routes". It will show the line which is connected between the places on the map.




6. After finishing the plan, she gets information about coral reefs on the website. On a day for the journey, she uses the website as navigation. The website guides the user to a start place where is most close to her location and arrives at the last place.

# 4. Plan of Completion

**Leadership**
Team coordination: Jiaqi Zhou

Overall design approach: Yeonjin Kim

Overall technical approach: Jiaqi Zhou

Overall documentation approach: John Chi

**Implementation Scope**
The core aspect of our project is the click-and-get-information function, which defines our website, using API from data.gov.au, and offering the user useful information. Thus, this part will be the MVP of our project. In the worst situation, we will at least realize this function so that the audience can achieve the informational purpose on our page.

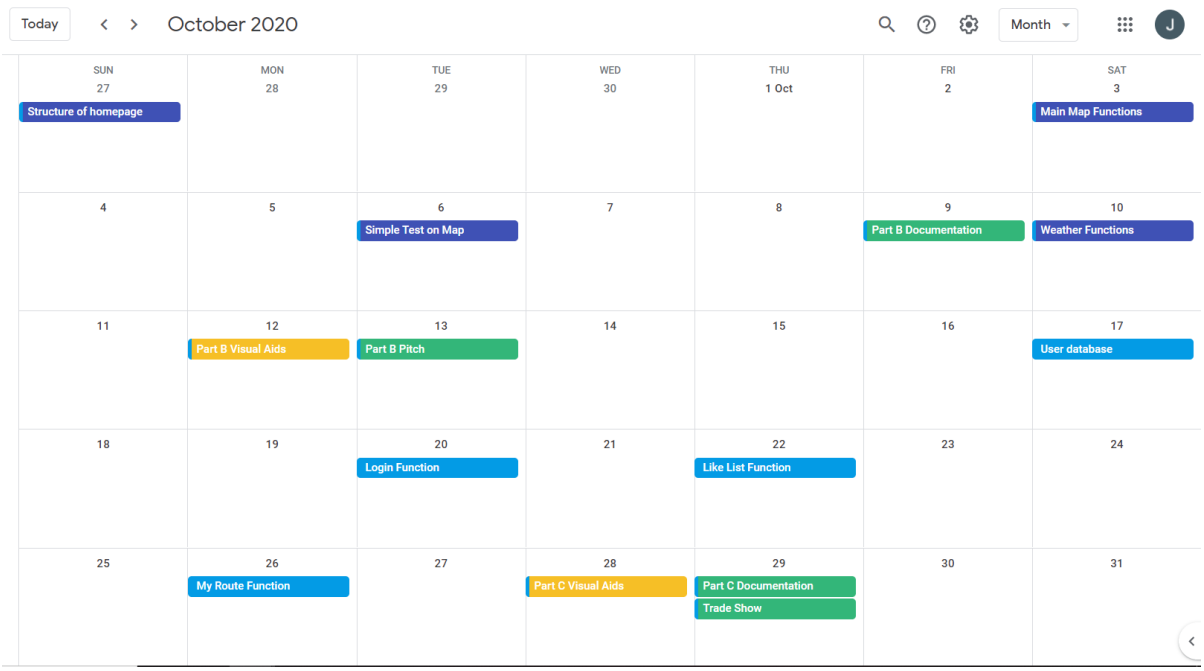
There are five additional features:

1. Weather Information:
   If the users click on the weather, three kinds of weather icons slide out. If you then click on any of them, it will show you the information about the weather on the map so the users can decide with more consideration.
2. Designated Shipping Area Information:
   If the users click on the boat route, the Designated Shipping Area Map will pop up to the home page. Thus, they will know where they can drive their boat and where not.
3. Top 10:
   In this function, the admin will manage the added spots by login users and show the top 10 popular reefs.
4. My Routes:
   For login users, they can add preferred reefs, and the system will generate a proper routine for them.
5. Related Resources:
   If the nontarget audience accidentally comes to our website, we provide links to guided tour websites so that it will be easy for them to search for a proper routine.

**Tasks Completion Plan**

| Function | Aspect | Members | Time |
|---|---|---|---|
| Structure of the homepage | Design | Yawen, Mengxuan, Jiaqi | 21 / 09 – 23 / 09 |
| | Technical | Yeonjin, John | 24 / 09 – 27 / 09 |
| Main map functions | Design | Yeonjin, John | 27 / 09 – 29 / 09 |
| | Technical | Yawen, Mengxuan, Jiaqi | 29 / 09 – 03 / 10 |
| Part B documentation | | All | 04 / 10 – 09 / 10 |

| | | | |
|---|---|---|---|
| Weather function | Design | Yawen, Jiaqi, John | 04 / 10 – 06 / 10 |
| | Technical | Yeonjin, Mengxuan | 06 / 10 – 10 / 10 |
| Part B visual aids | | Yawen, Jiaqi | 09 / 10 – 12 / 10 |
| Part B pitch | | All | 13 / 10 |
| User database | | Mengxuan, Yeonjin | 11 / 10 – 17 / 10 |
| Login function | Design | Yeonjin, Mengxuan | 18 / 10 |
| | Technical | Yawen, Jiaqi, John | 18 / 10 – 20 / 10 |
| Like list function | Design | Yawen, Jiaqi, John | 20 / 10 |
| | Technical | Yeonjin, Mengxuan | 20 / 10 – 22 / 10 |
| My route function | Design | Yeonjin, Mengxuan | 23 / 10 |
| | Technical | Yawen, Jiaqi, John | 23 / 10 – 26 / 10 |
| Part C visual aids | | All | 23 / 10 – 28 / 10 |
| Part C documentation | | All | 23 / 10 – 29 / 10 |
| Trade show | | All | 29 / 10 |




We separate the tasks depending on the functions of our project. For each function, we split it into the design and the technical part. Because we have already done the prototype, there is not much left for the design part. Every time, we will confirm the colour theme and modify the prototype as needed. Then the other members will deal with the technical implementation.

To make it straightforward for everyone and as a reminder, we put the essential time points on the google calendar. The tasks in navy are the main functions of our website, which we must get realized. The tasks in blue are the additional features. The tasks in green are the assessment. The tasks in yellow are the preparation for the contact session.

**Potential Issues and Solutions**

As it is the first time for us to do teamwork to finish a website and it is also the first time for us to use PHP to realize the functions on the site, during the process, there are some issues that we can imagine. We have decided on the standard solution to these problems.

**Issues:**

1. Inability to finish the tasks due to medical condition and exceptional circumstances
2. Technical problems, especially when we implement the "top 10" function: we do not know whether we can realize it or not.

**Solutions:**

1. According to our allocation, there are always multiple members working on each task. It will reduce the possibility of this kind of issue. However, if it happens, related team members need to communicate with other members as soon as possible. We can adjust the tasks later to help cover the point.
2. Members should communicate with the related leading member first to see whether we can solve it by the team. If not, ask tutors for some help. In the worst case that we cannot figure out how to solve some issues, we should deliver the minimum viable product mentioned above.

## 5. Feedback

Feedback Questions:

1. Is there anything missing from the website?

2. Is the information clear and concise?

3. Are you satisfied with the website? And why?

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