

# IA2 Technical Proposal Stimulus

## Technical Proposal for a New Web Application Tool

### Identification

The REIQ (Real Estate Institute of Queensland) is a professional association that was established to support the Real Estate Industry in Queensland (<https://www.reiq.com/about/>). They exist to provide information, products and resources to their Real Estate Practitioner members, who are then able to pass this on to the general public through the delivery of high quality property services. These resources and products include reports that enable monitoring, analysis and insights into real-estate markets across the state.

They require tools for their members that allow effective and efficient property comparison for their clients. REIQ have identified that schools and transportation are both important criteria when making real estate property decisions. <https://www.reiq.com/articles/eight-steps-for-buying-property/>

You are required to **develop a new Property Comparison web application** that:

- Provides an intuitive and responsive interface
- allows exploration and comparison of the property market using school locations and transportation services criteria data.
- allow users to search for properties based on these criteria (schools and transportation)
- contains an information page that provides appropriate explanations of the data, the source of the data and how the data is used.
- Provide an administrative tool that allows editing and updating of the database set
- appropriate validation checks on new data before it can be uploaded to the database

The overall design of the web application must:

- apply accessibility principles and usability principles
- include appropriate attribution to data and images used
- comply with copyright law

### Interactions

Personas have been developed for potential users and clients of the website (see Figure 1):

#### Helen



- An experienced real estate agent in a busy office on the northside of Brisbane
- Predominantly deals with families and couples looking to buy property
- Interested a way to quickly identify properties for her clients that have good commuting links and close to schools

### David



- A young real-estate agent working in a Brisbane suburban office
- Has been working in the profession for only 6 months and still on probationary training
- Interested in tools that will help him learn more about the Brisbane real-estate market and his clients

### Brad



- is a 40-something year old successful salesman looking to buy a family home.
- He is looking for a property that can accommodate his elderly mother-in-law, within proximity to a high school for his eldest son, and room for his wife who runs a business from home.
- Brad dislikes traffic, worries about his family safety, and wants to live near a park where can walk his two Labradors.

Figure 1: User profiles for the new web application

REIQ have specified the following criteria:

- Users must be able to register personal details with the site
- An incorrect user registration will not be stored in the database
- Administrators must be able to upload transport and school information to the website from a .csv file
- Users must be able to enter a keyword to find information about bus stops and schools relevant to the area they are interested in
- The web application complies with Government web design standards
- The web application complies with the Australian *Privacy Act (1988)*

## Component Specifications

### Data

There are a number of data sets that are relevant when researching the property market, but for this solution only two data sets will be incorporated into the structure of the solution. The two data sets to be used are:

- School locations - “**CentreDetails\_Qld\_May\_2020.csv**” can be found with this URL <https://www.data.qld.gov.au/dataset/state-and-non-state-school-details>
- Bus stop locations – “**bus-stop-locations.csv**” <https://www.data.brisbane.qld.gov.au/data/dataset?tags=transport>

A sample screenshot of the dataset for “State and non-state school details.csv” is shown below:

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1	Centre Co	Centre Na	Centre Typ	Centre St	Host Hos	Official Lo	Official Hi	Officer In	School Ba	Show Holiday Date	Internet Si	Phone Nur	Restrict Cc	Fax Numbl	Actual Ac	
2	5817	A B Paters	Non-State	Open		Prep Year	Year 12	Principal			www.abp	(07) 5594 7 N		(07) 5594 7650		
3	591	Abercorn S	State Scho	Open		Prep Year	Year 6	Principal		5	10-Aug-20	www.aber	(07) 4167 5 Y		(07) 4167 5135	
4	1275	Abergowri	State Scho	Open		Prep Year	Year 6	Principal		5	3-Jul-20	www.aber	(07) 4777 4 N		(07) 4777 4686	
5	5588	Aboriginal	Non-State	Open		Prep Year	Year 12	Principal			www.murr	(07) 3255 6133		(07) 3255 6562		
6	25	Acacia Rid	State Scho	Open		Early Child	Year 6	Principal		8	12-Aug-20	www.acac	(07) 3717 4 N		(07) 3717 4100	
7	1983	Agnes Wa	State Scho	Open		Prep Year	Year 6	Principal		7	28-May-20	www.agne	(07) 4902 1 N			
8	598	Airville St	State Scho	Open		Prep Year	Year 6	Principal		5	24-Jun-20	www.airvi	(07) 4790 7 N		(07) 4790 7300	
9	801	Aitkenvale	State Scho	Open		Prep Year	Year 6	Principal		8	6-Jul-20	www.aitke	(07) 4421 2 N		(07) 4725 5989	
10	2155	Albany Cr	State High	Open		Year 7	Year 12	Principal		11	10-Aug-20	www.alba	(07) 3325 6 N		(07) 3325 6300	
11	190	Albany Cr	State Scho	Open		Prep Year	Year 6	Principal		10	10-Aug-20	www.alba	(07) 3264 0 N		(07) 3264 0100	
12	1892	Albany Hill	State Scho	Open		Prep Year	Year 6	Principal		10	10-Aug-20	www.alba	(07) 3264 0 N		(07) 3264 0700	
13	5636	Albert Parl	Non-State	Open		Year 11	Year 12	Principal			www.youtl	(07) 3071 9010		(07) 3327 2217		
14	38	Albert Sta	State Scho	Open		Prep Year	Year 6	Principal		6	22-May-20	www.albe	(07) 4120 0 N		(07) 4120 0800	
15	2017	Aldridge S	State High	Open		Year 7	Year 12	Principal		11	22-May-20	www.al dri	(07) 4120 8 N		(07) 4120 8400	
16	1963	Alexandra	State Scho	Open		Early Child	Year 6	Principal		5	20-Jul-20	www.alex	(07) 4098 9 N		(07) 4098 9182	
17	2175	Alexandra	State High	Open		Year 7	Year 12	Principal		11	10-Aug-20	www.alex	(07) 3820 1 N		(07) 3820 1400	
18	405	Alexandra	State Scho	Open		Prep Year	Year 6	Principal		7	10-Aug-20	www.alex	(07) 3820 0 N		(07) 3820 0300	
19	1866	Algester S	State Scho	Open		Prep Year	Year 6	Principal		10	12-Aug-20	www.alge	(07) 3712 5 N		(07) 3712 5100	
20	5369	All Hallow	Non-State	Open		Year 5	Year 12	Principal			www.ahs.	(07) 3831 3100		(07) 3832 6140		
21	5452	All Saints	Non-State	Open		Prep Year	Year 12	Headmaster			www.asas	(07) 5530 2855		(07) 5530 3314		
22	5600	All Saints	Non-State	Open		Prep Year	Year 6	Principal			www.allse	(07) 3325 6900		(07) 3264 5877		
23	5111	All Saints	Non-State	Open		Prep Year	Year 6	Principal			www.allse	(07) 5463 1 N		(07) 5463 2597		
24	5451	All Souls S	Non-State	Open		Prep Year	Year 12	Headmaster			www.allsc	(07) 4787 1433		(07) 4787 3049		
25	155	Allenstow	State Scho	Open		Prep Year	Year 6	Principal		8	11-Jun-20	www.aller	(07) 4930 0 N		(07) 4930 0100	
26	773	Alligator C	State Scho	Open		Prep Year	Year 6	Principal		7	18-Jun-20	www.allig	(07) 4956 4 N		(07) 4956 4417	
27	3	All Saints	Non-State	Open		Prep Year	Year 6	Principal			7-Feb-20	www.allse	(07) 3325 6900		(07) 3264 5877	

A sample screenshot of the dataset for “Bus-stop-locations.csv” is shown below:

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
	HASTUS_ID	TRANSUN	DESCRIPTION	STREET_NA	NEAREST	EASTING	NORTHING	LATITUDE	LONGITUD	SUBURB	BUS_STOP	TACTILE_G	BOARDING	ROAD_GR	CROSS_FAI	DATE_OF_LAST_AUDIT	
1	'000001		Herschel S	HERSCHEL ST		501885	6961746	-27.46783	153.01908	BRISBANE	4 - Regular N		Easy	Easy			
2	'000002		Herschel S	NORTH QUAY		501851.9	6961717	-27.4681	153.01874	BRISBANE	3 - Regular N		Easy	Easy			
3	'000003		Turbot St F	TURBOT ST		502311.3	6961838	-27.46701	153.02339	BRISBANE	2 - Interme N		Easy	Easy			
4	'000004		Turbot St F	TURBOT ST Wharf St		502805.7	6962248	-27.46331	153.0284	SPRING HIL	2 - Interme Y		Easy	Easy	Medium	6/02/2018	
5	'000005		Ann Street	ANN ST	Queen St	503022.1	6962291	-27.46292	153.03059	BRISBANE	3 - Regular Y		Medium	Medium	Hard		
6	'000006		Ann St app	ANN ST	Creek St	502880.6	6962169	-27.46401	153.02915	BRISBANE	2 - Interme Y		Easy	Easy	Easy	26/09/2017	
7	'000007		Ann St at A	ANN ST	Creek St	502617.7	6961938	-27.46611	153.02649	BRISBANE	2 - Interme Y		Easy	Easy	Easy	26/09/2017	
8	'000008		Central An	ANN ST	Edward St	502569.1	6961895	-27.46649	153.026	BRISBANE	2 - Interme Y		Easy	Medium	Easy	14/03/2018	
9	'000009		Ann St at A	ANN ST	Edward St	502466.1	6961808	-27.46727	153.02496	BRISBANE	3 - Regular Y		Easy	Medium	Easy	26/09/2017	
10	'000011		Ann Street	ANN ST	George St	502266.7	6961637	-27.46882	153.02294	BRISBANE	2 - Interme Y		Easy	Easy	Easy	23/05/2018	
11	'000012		Central An	CREEK ST		502701.6	6962011	-27.46544	153.02734	BRISBANE	2 - Interme Y		Easy	Medium	Easy	23/05/2018	
12	'000014		Ann St @ C	ADELAIDE ST		502262.7	6961634	-27.46894	153.0229	BRISBANE	2 - Interme N						
13	'000017		Adelaide S	GEORGE ST		502271.7	6961512	-27.46995	153.02299	BRISBANE	2 - Interme Y			Easy	Easy		
14	'000018		Adelaide S	ADELAIDE : George St		502293.9	6961531	-27.46978	153.02322	BRISBANE	2 - Interme Y		Easy	Easy	Easy	26/09/2017	
15	'000019		Adelaide S	ADELAIDE : Albert St		502346	6961572	-27.4694	153.02375	BRISBANE	1 - Premiui Y		Easy	Easy	Easy	26/09/2017	
16	'000020		Adelaide S	ADELAIDE : Albert St		502393	6961615	-27.46902	153.02422	BRISBANE	2 - Interme Y		Easy	Easy	Easy	26/09/2017	
17	'000021		Adelaide S	ADELAIDE : Albert St		502452.9	6961669	-27.46853	153.02483	BRISBANE	4 - Regular Y		Easy	Easy	Easy	26/09/2017	
18	'000022		Adelaide S	ADELAIDE : Albert St		502469.6	6961684	-27.4684	153.025	BRISBANE	2 - Interme Y		Easy	Hard	Easy	26/09/2017	
19	'000023		Adelaide S	ADELAIDE : Edward St		502521.6	6961729	-27.46799	153.02552	BRISBANE	3 - Regular Y		Easy	Easy	Easy	26/09/2017	

## User Interface/Experience

The application must provide (for the REIQ and its members):

- A responsive and dynamic web interface
- It must be able to register users and maintain the following details about them
  - o First name
  - o Last name
  - o Occupation
  - o Name of real estate agency/business
- An interface that has applied usability principles <https://www.interaction-design.org/literature/topics/usability> and <https://www.designprinciplesftw.com/collections/10-usability-heuristics-for-user-interface-design>
- Adherence to Web Content Accessibility Guidelines. Refer <https://www.w3.org/WAI/standardsguidelines/wcag/glance/>

The web application will need to provide users with an Information page which provides general information such as:

- definition of terms
- source of information and how the information is used
- explanations that help the user understand the data

## Code

- algorithms and code to:
  - read records from a csv file and store them in a database table
  - search the database based on specified criteria and display the results
  - record and validate user registration details
  - ensure the site is being operated by an authenticated user
  - utilise a “session” variable to manage the user’s “login” information
- an algorithm for checking the csv data before loading it into the database.

## Accessibility Guidelines

Table 1: Accessibility guidelines adapted from the Australian accessibility standards

Accessibility guidelines
<p>Page titles:</p> <ul style="list-style-type: none"> <li>• must appear in the browser tab for all pages</li> <li>• must be appropriate for the page</li> <li>• must be different for each page.</li> </ul>
<p>Alt text:</p> <ul style="list-style-type: none"> <li>• must be used for all content images (except decorative images)</li> <li>• attribute is set to null for decorative images</li> <li>• appropriately describes the content of the image to which it relates</li> <li>• gets larger when pages are zoomed.</li> </ul>
<p>Headings:</p> <ul style="list-style-type: none"> <li>• are on every page (at least one)</li> <li>• levels on each page have a meaningful hierarchy.</li> </ul>
<p>Zooming of pages:</p> <ul style="list-style-type: none"> <li>• results in correct display of the page with no horizontal scrolling</li> <li>• allows all buttons to remain visible.</li> </ul>
<p>Non-mouse navigation (keystrokes or tabs):</p> <ul style="list-style-type: none"> <li>• of page is in a logical order</li> <li>• allows access to all page elements.</li> </ul>
<p>Fields:</p> <ul style="list-style-type: none"> <li>• in forms and other form controls have a visible label to allow interaction with voice input and increase the clickable area</li> <li>• that are mandatory are clearly indicated and do not rely on colour alone</li> <li>• with required formats, such as dates (year, month, day), are clearly indicated.</li> </ul>

Error messages (or validation messages):

- are clear and specific
- do not cause the form to be completely reset.

Accessibility options include:

- general instructions for user input at the top of the form or section to which they relate
- text transcripts provided for audio and video elements
- appropriate contrast ratio between text and background (colour contrast)
- a five-second time limit for all moving or flashing content, and the content can be disabled or controlled by the user.

## References

1. Queensland Government open data portal - list of schools in Queensland. Accessed July 2020  
<https://www.data.qld.gov.au/dataset/state-and-non-state-school-details>
2. Brisbane City Council open data portal -Bus stop locations (Brisbane)  
<https://www.data.brisbane.qld.gov.au/data/dataset/brisbane-bus-stops>
3. Queensland Government - Queensland Legislation. 2018. Accessibility. [ONLINE] Available at:  
<https://www.legislation.qld.gov.au/accessibility>. [Accessed 25 July 2019].
4. Real Estate Institute of Queensland (REIQ) , <https://www.reiq.com/>