



ACCA4018 – Internet Technology and Security
Website Design with HTML5 and CSS3

ABSTRACT

The task was assigned to design and build a website of choosing using HTML5 and CSS3 as well as other methods such as frameworks like Bootstrap. Once designed and built, evaluations and audits were conducted for accessibility, design, performance and search engine optimisation and the results produced with recommendations for improvement to these areas.

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1.0 Website Requirements

The first thing to be done was to choose a subject for the website. Having bought a van last year, converting it, and travelling across Europe for five weeks last summer, it was felt that this was the perfect subject matter for a website. The website has been designed as a travel blog with all photographs used from the huge collection taken whilst travelling, and stories included are from the journals written and Instagram posts over this time.

The intention was that the website is a combination of informative, entertaining content and a travel blog, with an almost book like story telling feel, appealing to a wide demographic for leisure. It was important to navigate easily as well, and keep within a minimalist style, but show as much of the travels as possible. Several interlinking pages would bring the stories together, with comments form and a link to the social media and it would be easy to build on as more travels came along or other content presented itself.

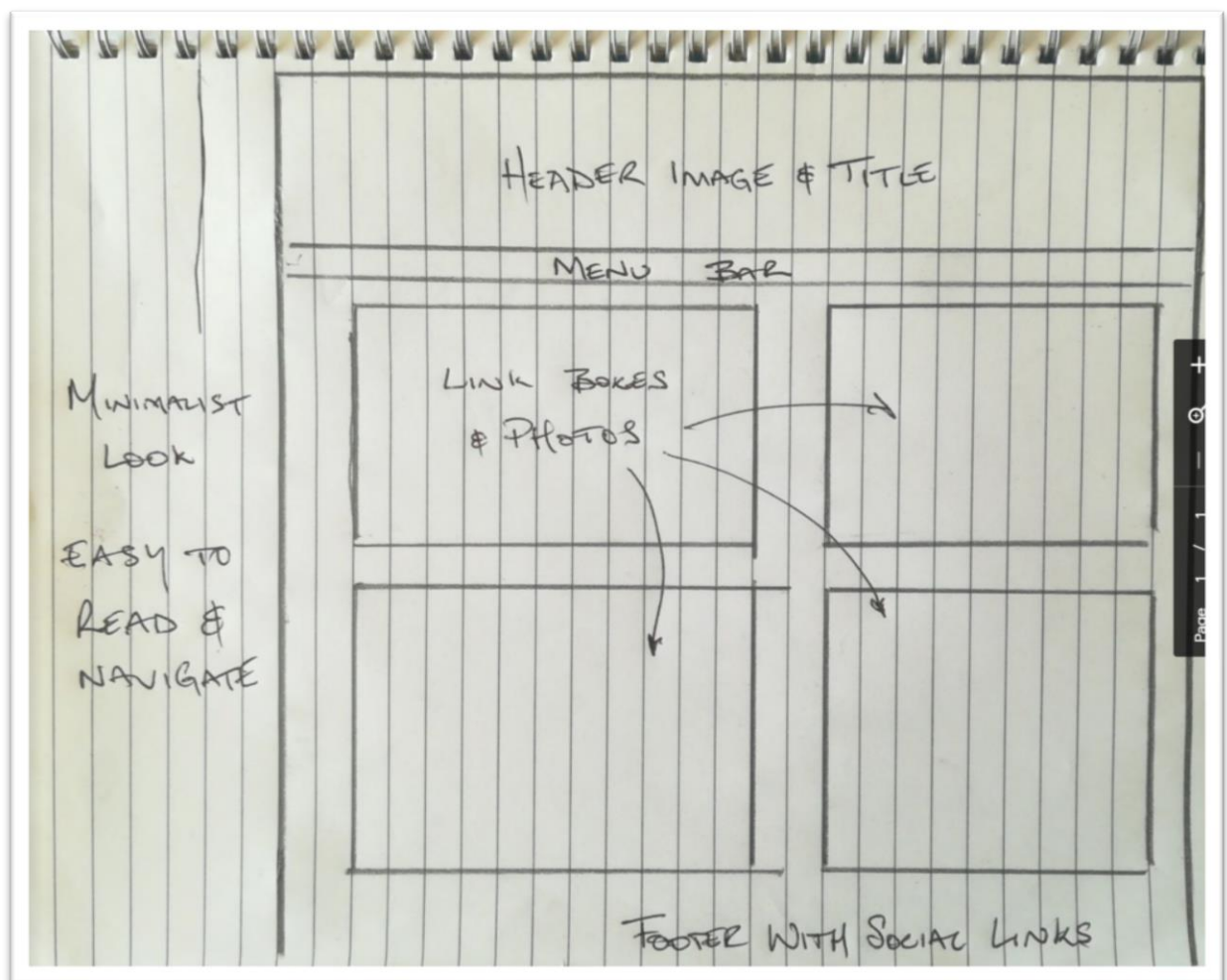


Figure 1 - Landing Page Plan

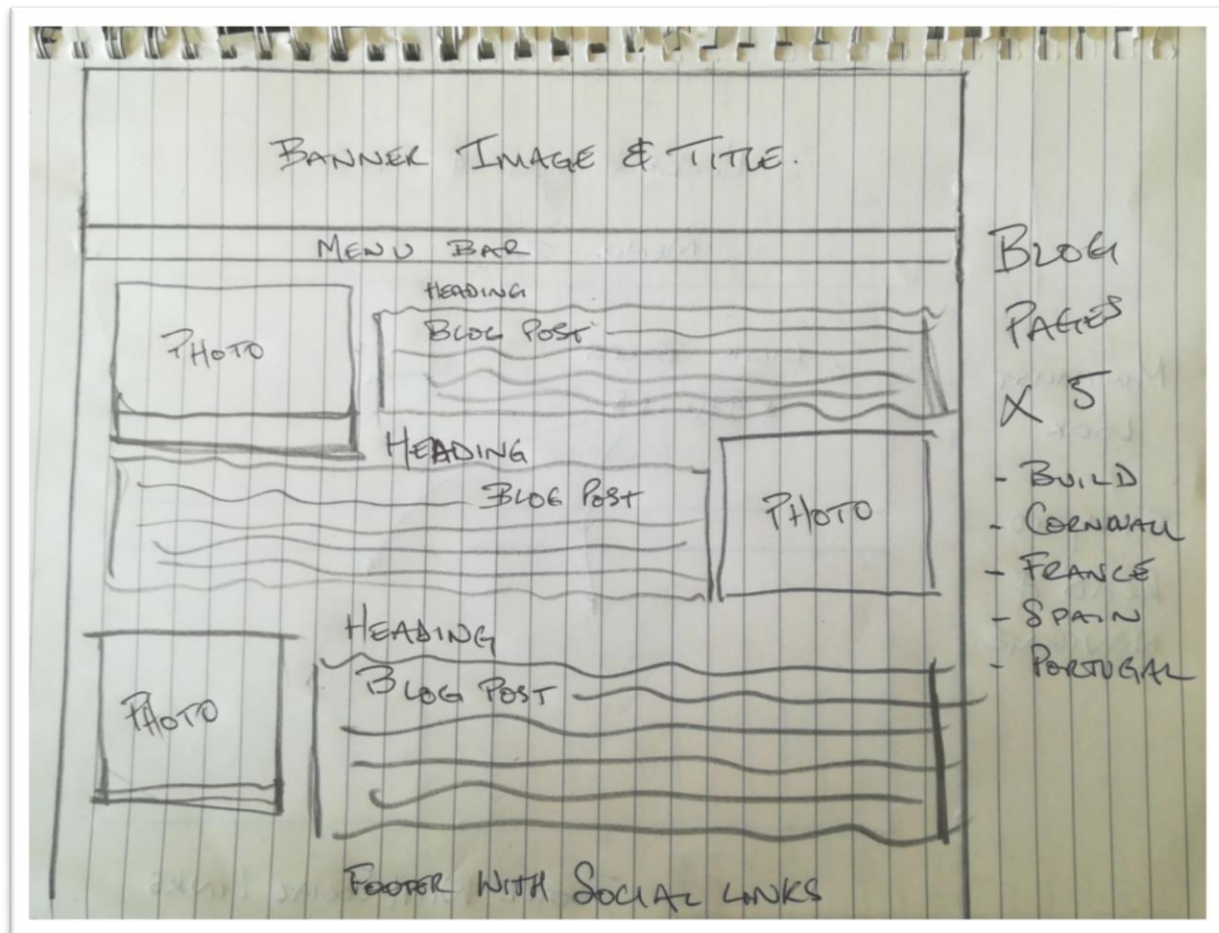


Figure 2 - Blog Page Plan

2.0 Implementation

Consideration was given to different methods of writing the code for the website and research was conducted into HTML[1], CSS [2], Bootstrap [3], Flexbox[3] and the possibility of JavaScript [4]. As an assignment to present the skills learnt within this module, it was decided not to use the Bootstrap framework[3] and create the complete structure. There was some further research into header banners, menu bars and the use of Flexbox[3] as well as responsive techniques. This led to HTML[1] and CSS[2] code being created from a blank sheet, ensuring all the techniques were displayed. Flexbox[3] and hover transitions were a good starting point for the landing page and created the look required. [5]

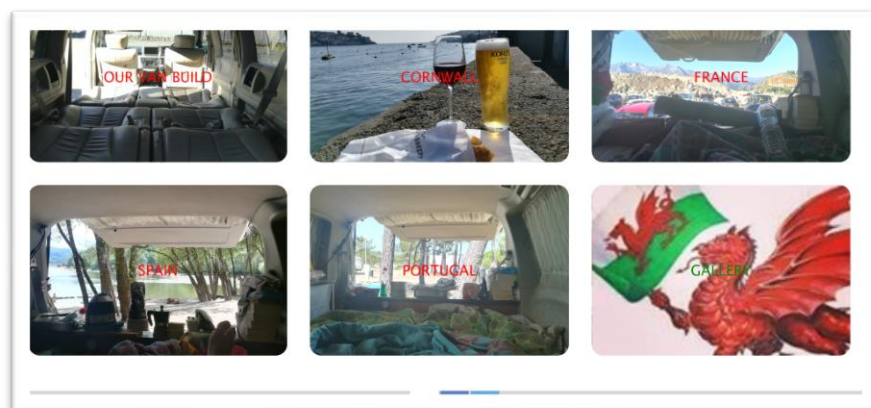


Figure 3 - Flexbox landing page

with a full-length banner and menu system across the top.



Figure 4 - Page Banner

This developed further to include a map and sticky menu, for ease of navigation, to the finished article, tied in with uniform minimal colouring.

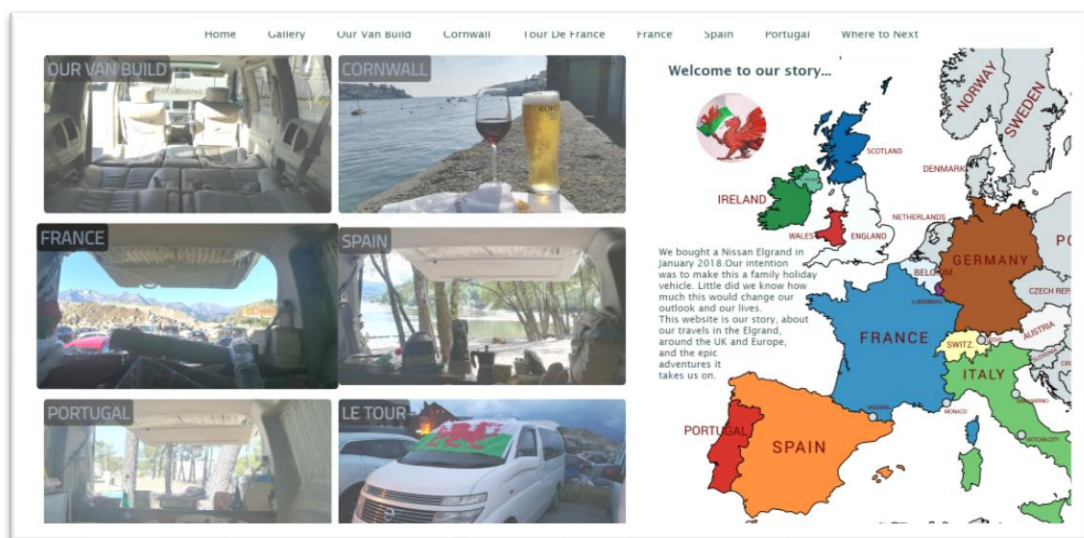


Figure 5- Finished Landing Page

The gallery used a responsive[5] [6] grid technique so that it can adjust in size and columns dependent on the screen size. For this it was given a dedicated style sheet.

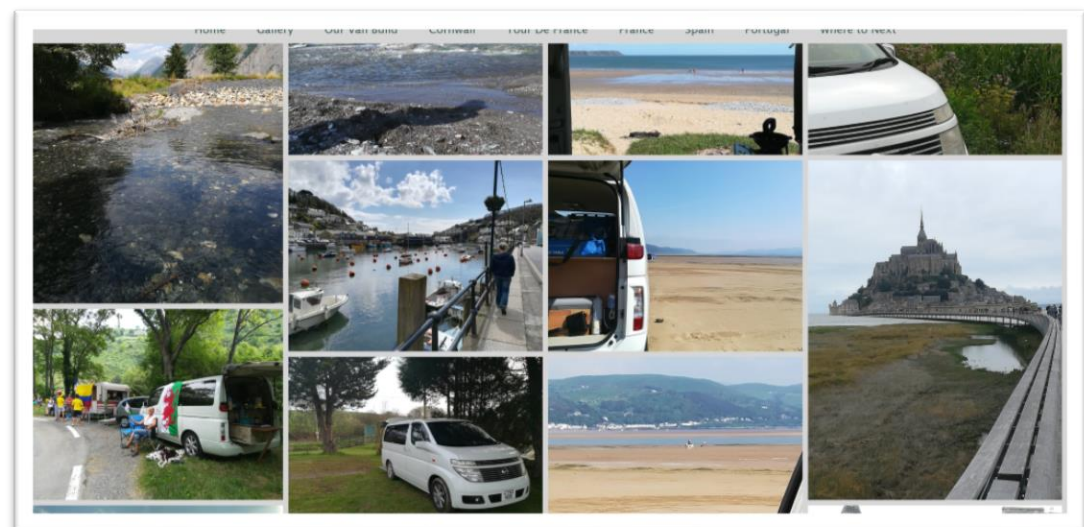


Figure 6 - Responsive Gallery

The blog pages were all included in the same style format apart from the ‘Tour De France’ page, and they were kept simplistic and minimal with ‘float left / right’ used for the pictures.

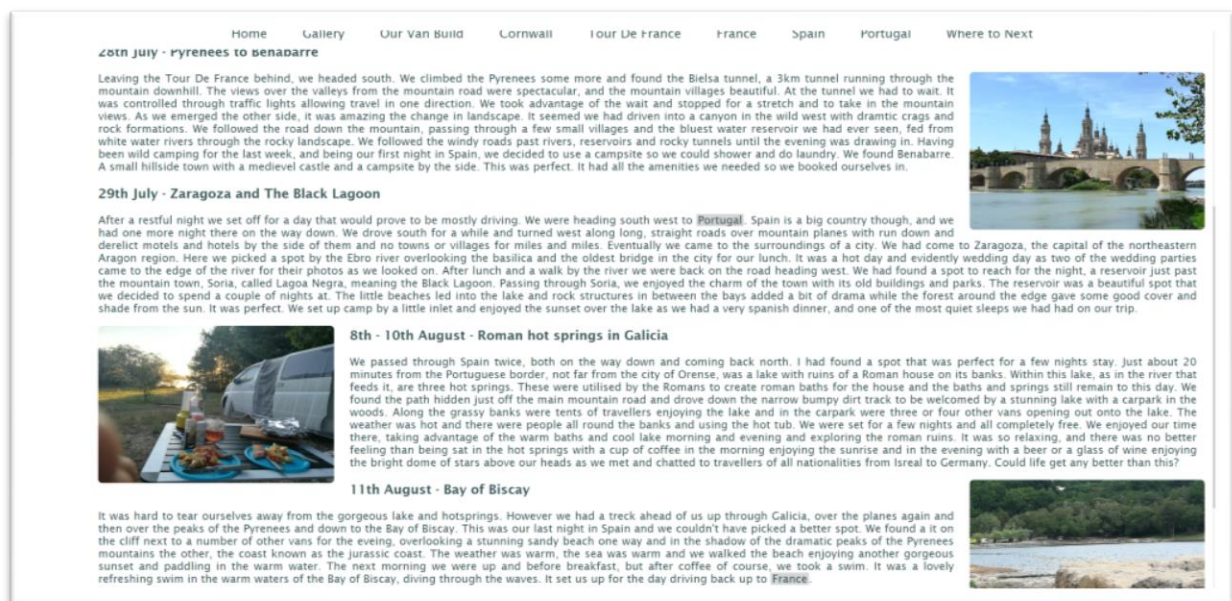


Figure 7 - Blog Pages Layout

The discovery of ‘Parallax Scrolling’ enhanced the ‘build’ and ‘future plans’ pages to show plans and map.

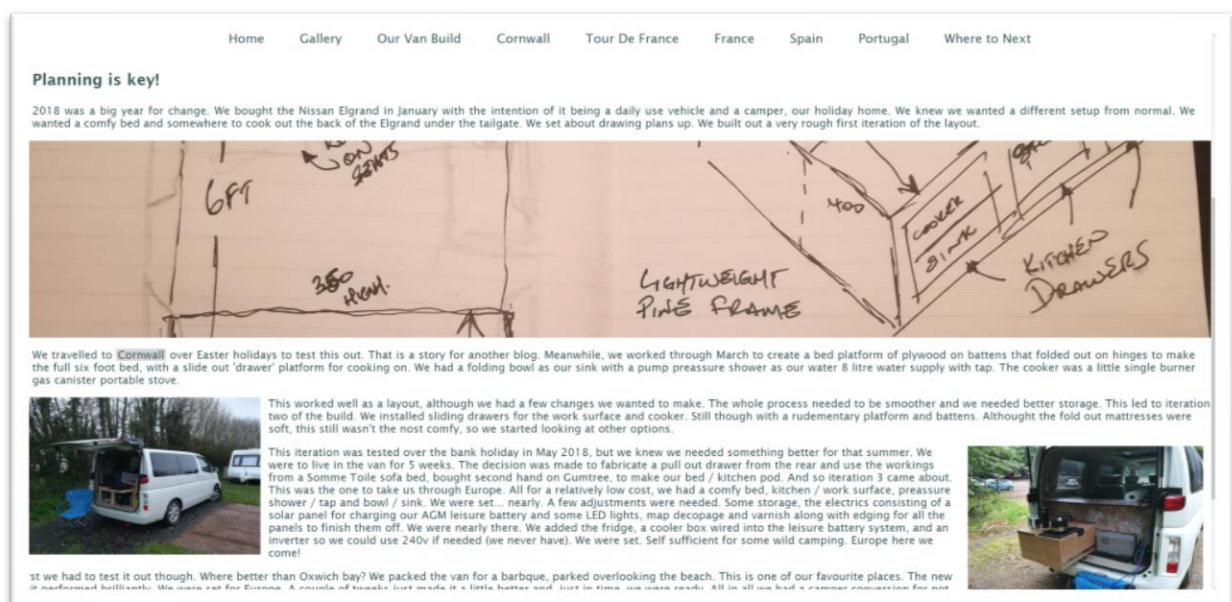


Figure 8 - Use of Parallax Scrolling

The same technique was then incorporated into the banner as well.

To demonstrate the slide show the most interesting of the many pictures were used for the Tour De France alongside the blog.



Figure 9 – Use of a Slide Show

A page was created for the ‘future plans’ page and was perfect to both embed a video and demonstrate form making for feedback and recommendations.

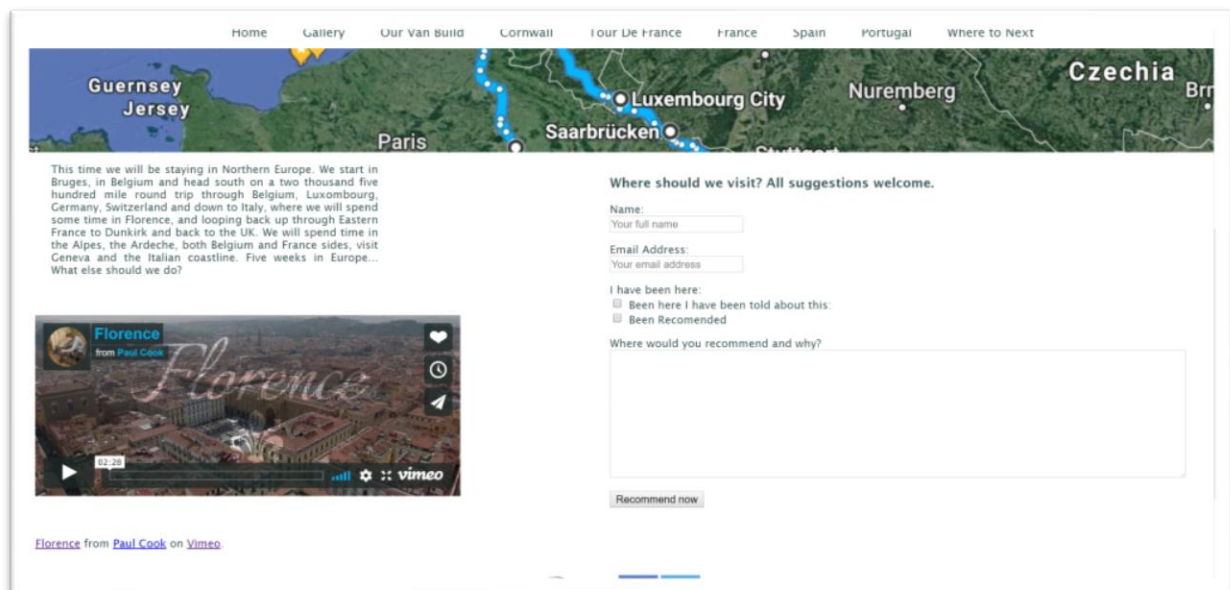


Figure 10 - Use of Video Embedding and Forms

2.1 Validation

Each page was run through W3C validation, both for HTML and CSS. This provided the following results;

- **Index page and Gallery** – Missed an ‘alt’ description to some images. This was added in to fix the issue. This is an important aspect as if the image cannot be displayed it will show alternative text, but more importantly for use with a text reader for accessibility purposes.

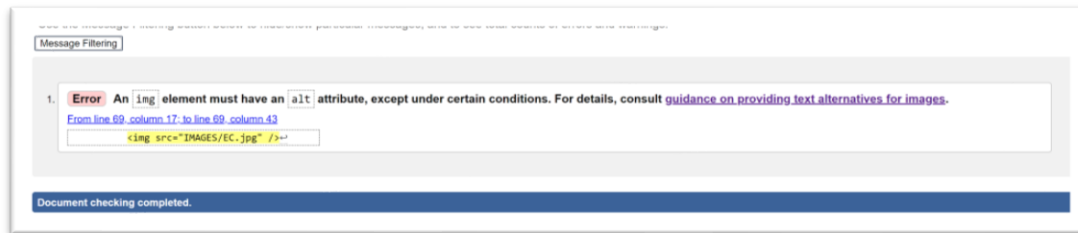


Figure 11- Validation Error

- **CSS file** - ‘text-wrap’ not existing. This was ok to use, however there is a short-hand syntax, ‘white-space’ which did the same and cleared the validation.

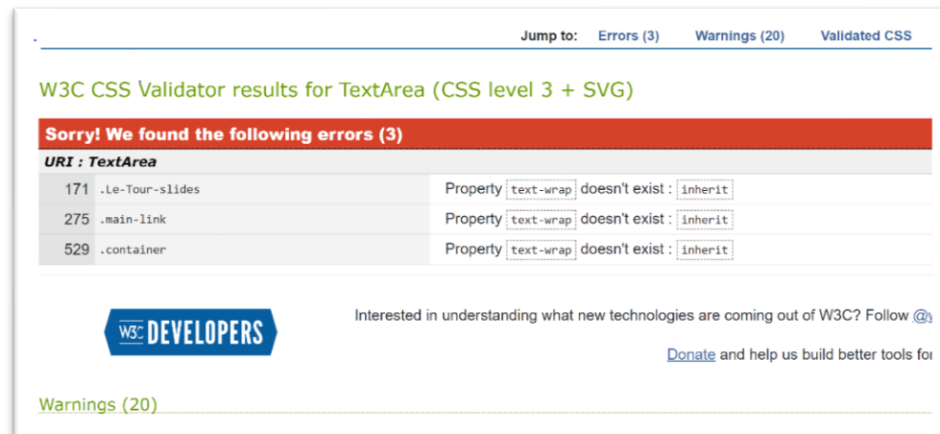


Figure 12 - Errors to Stylesheet

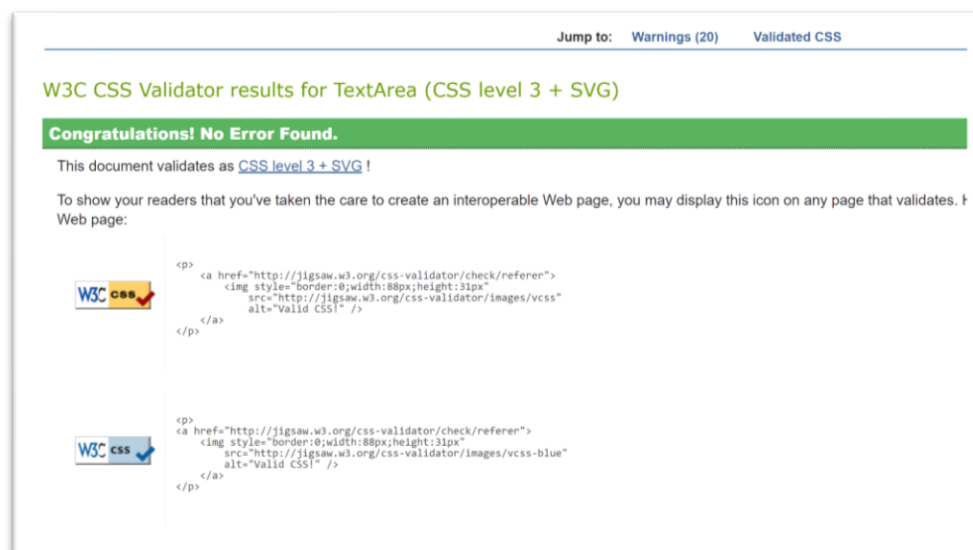


Figure 13 - Validated Stylesheet

3.0 Evaluation

It is important to evaluate the website to ensure it works on all levels. Consideration is given to three key areas here;

3.1 Accessibility

It is essential that a website be accessible for everyone. This involves an ease of use for which there are guidelines, known as the ‘Web Content Accessibility Guidelines’ (WCAG). The latest guidelines, WCAG 2.1, are built around four fundamental principles;

- **Perceivability** – Both content and interface must be presentable to users in a way that can be perceived by them. Put another way, it cannot be invisible to all their senses.
- **Operation** – The interface and navigation must be operable and must not need interaction that a user cannot perform.
- **Understanding** – The content and operation must not be beyond the understanding of the user.
- **Robustness** – The content must be robust enough to be interpreted by a wide range of agents and assistive technologies.

Although this is intended for users with disabilities, this stands true for all users. [7]

Having run an evaluation, screenshots of each page are below. The outcome shows there is a little work to get an AA rating. Contrasting is generally fine, other than the head banner which may be the way it is coded with saturation, but other elements of WCAG2, although generally good, show that the navigational side may need some adjustment; Jumping from H1 to H3, it may be better to have H2 instead. Justification of text may be an issue. However, all pictures have alternative text and all anchors have text in them as well.

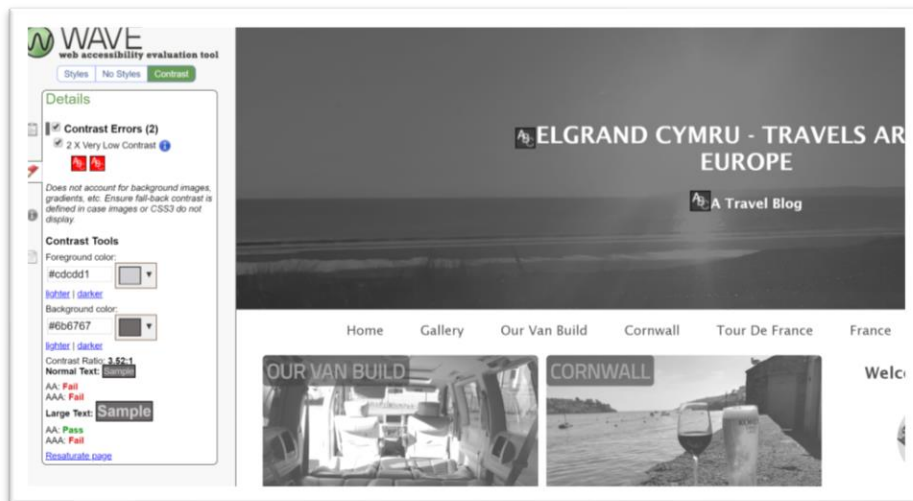


Figure 14 - Wave Accessibility Contrast Checker

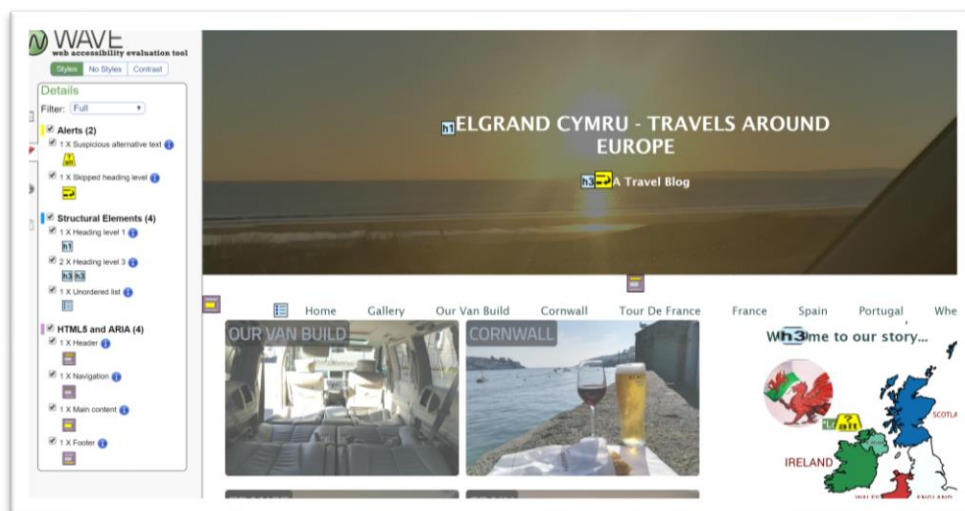


Figure 15 - Wave Accessibility Evaluation

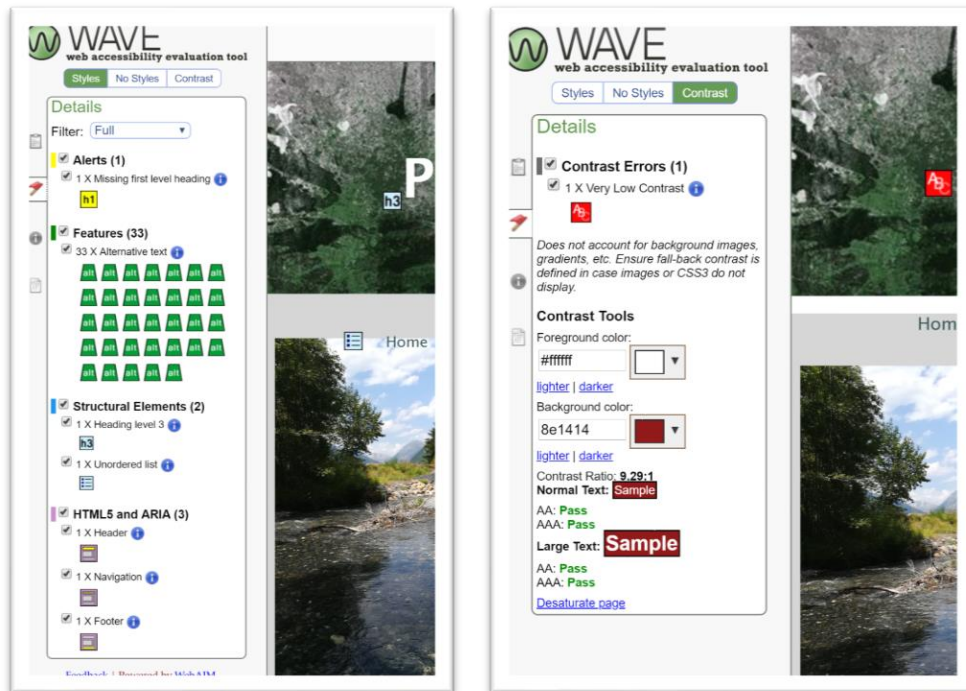


Figure 16 - Gallery Evaluation

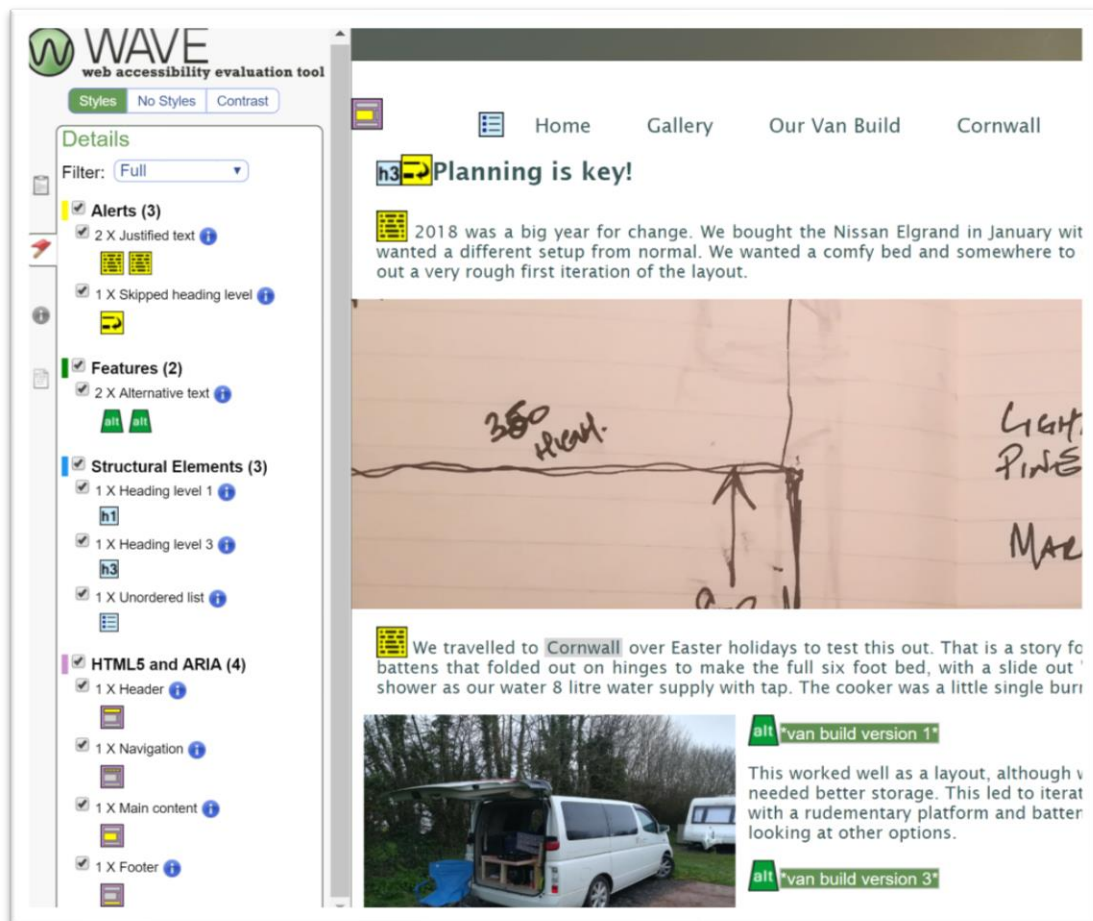


Figure 17-Van Build page Evaluation

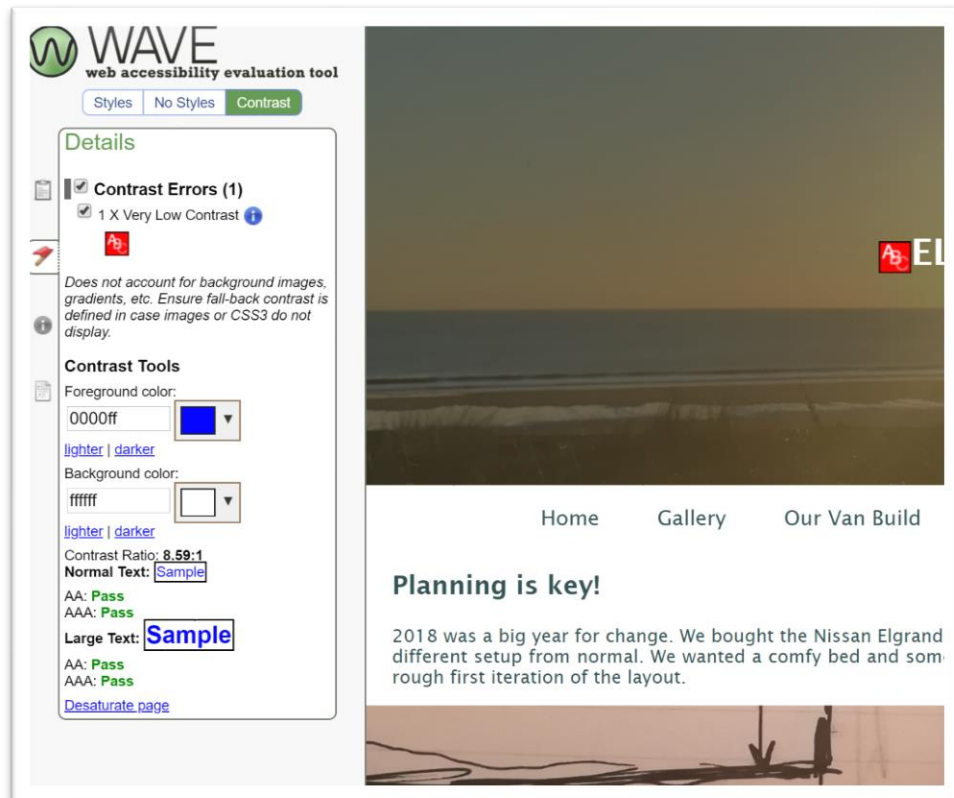


Figure 18- Van Build page Contrast Evaluation

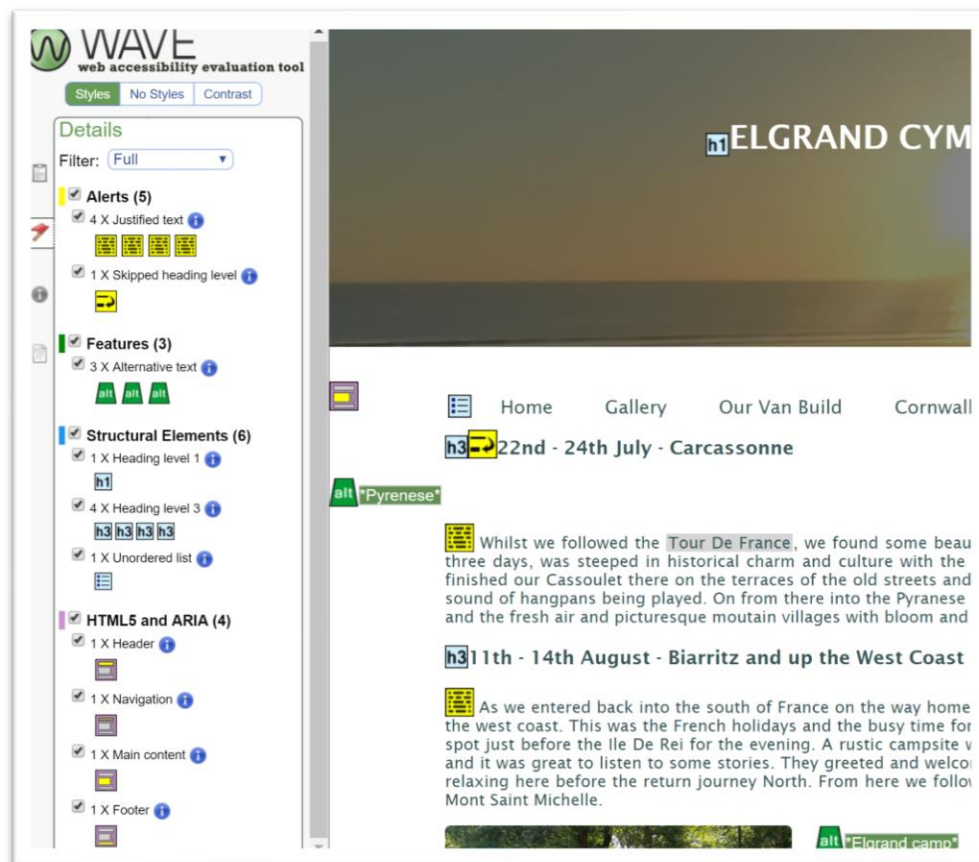


Figure 19- Blog page Evaluation



Figure 20 - Blog page Contrast Evaluation

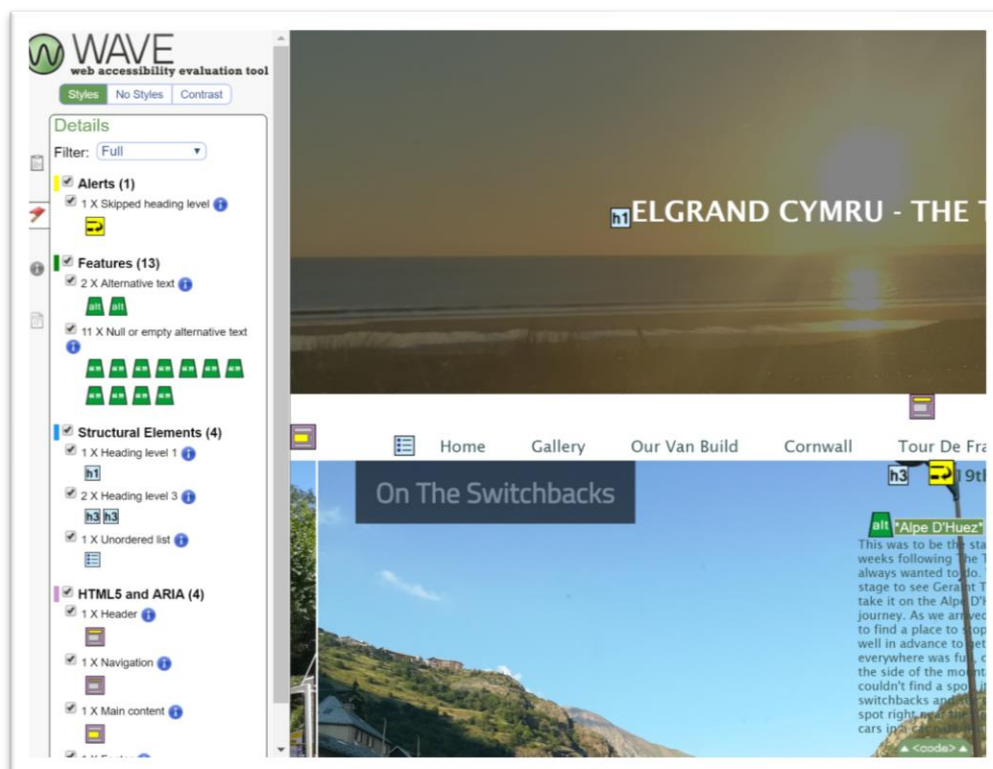


Figure 21 - Tour de France page Evaluation

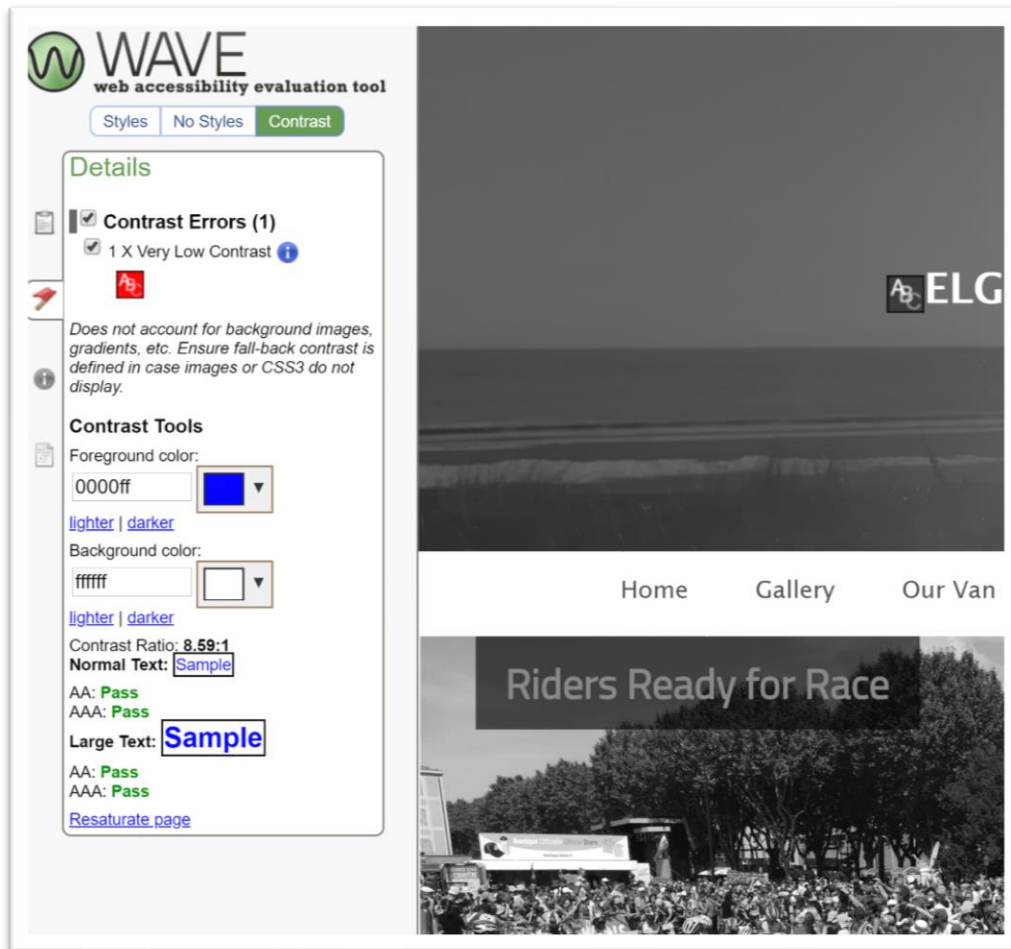


Figure 22 - Tour de France Contrast Evaluation

3.2 Design, look and feel

The look and feel to the website, as planned, looks;

- slick,
- minimal,
- uniform,
- clean.

The site holds interest through parallax scrolling and slide show features and has entertaining content. The landing page is easy to perceive and the whole site is easy to navigate with sticky menus at the top. There have been anchor links put into relevant words within the text to navigate to the corresponding pages and subjects. There is also engagement through the ‘what next’ page facilitated by a form for recommendations for places to visit.

Other audits scored reasonably high, although more work could be done to improve these.

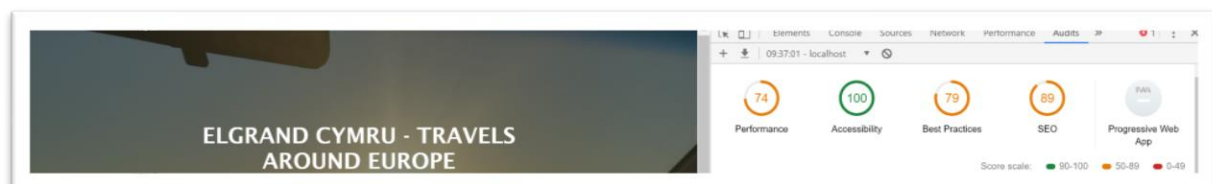


Figure 23- Landing page Audits



Figure 24 - Gallery Audits

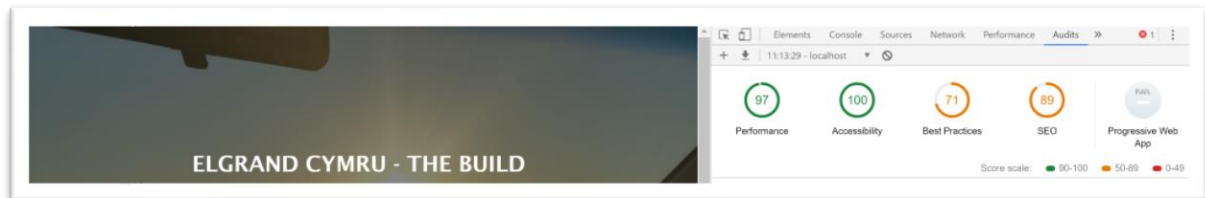


Figure 25 - Build page Audits

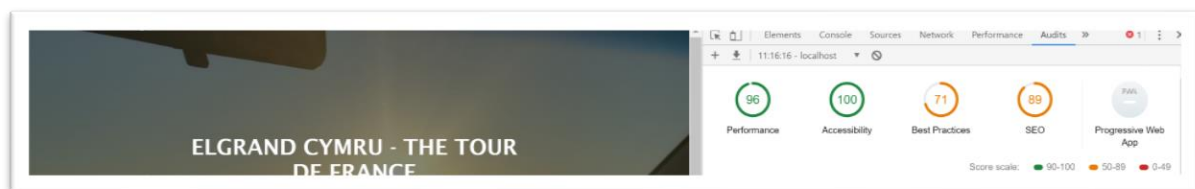


Figure 26 - The Tour page Audits

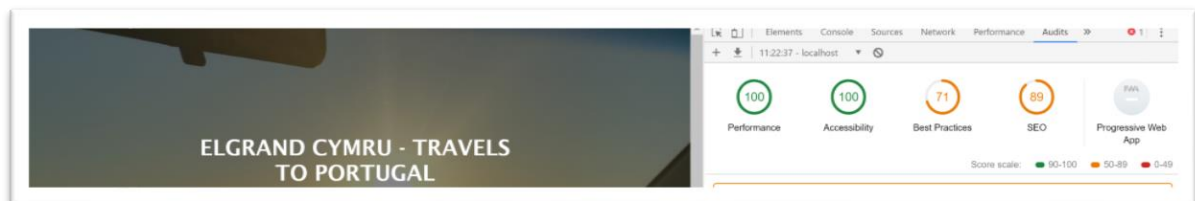


Figure 27 - Blog page Audits

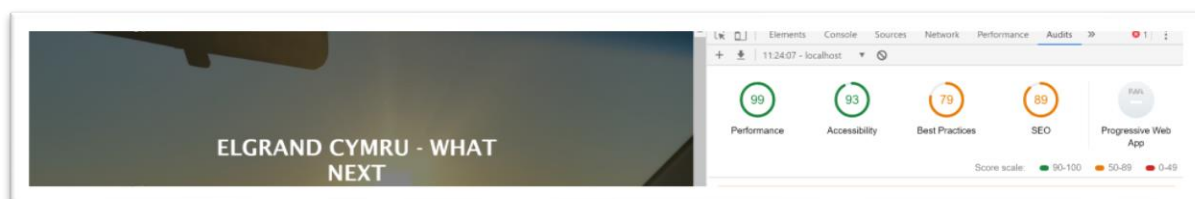


Figure 28 - What Next page Audits

3.3 Performance

In general, highly performing. The landing page is slightly less however this is generally because of images being sized differently and formatted in 'jpg' format. As an improvement, the use of optimized images in a 'png' format would be better.

3.4 Search Engine Optimisation (SEO)

All pages performed reasonably in SEO audits. There is good metadata in the header, a title, and good search terms and words accounted for. There has also been a 'viewport' included to give scale on different devices.

To improve this, there could be a description added to the metadata This would be displayed within a search thereby improving SEO. [8]

4.0 Conclusion

As the author, having never used HTML or CSS before, it was an enjoyable experience.

The importance of a stylesheet to enhance the website is paramount, and this can be completed in different ways. As well as using CSS, there are several frameworks including Bootstrap as well as the use of JavaScript.

Best practices will ensure criteria is met, most importantly accessibility to allow wide spread use by all users, but also search engine optimisation allowing highest visibility for the website and ease of use and performance through the design.

Improvements could be made to the website submitted, highlighted through the audit tests and articulated in the relevant sections.

Further research outside of the scope of this assignment would be around the security and vulnerabilities in publishing a website like this and protecting against these.

References

- [1] J. Wisniewski, "HTML5," *Online*, vol. 35, no. 6, pp. 53 - 56, 2011.
- [2] D. Sawyer.McFarland, CSS (The Missing Manual, Beijing ; Farnham: Pogue/O'Reilly, 2006.
- [3] S. Moreto, Bootstrap 4 by example : Learn responsive web development with Bootstrap 4's front end framework, Birmingham: Packt Publishing, 2016.
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- [5] W3Schools, "W3Schools," [Online]. Available: <https://www.w3schools.com/>. [Accessed January, February, March 2019].
- [6] B. Frain, "Responsive Web Design with HTML5 and CSS3," Packt Publishing, Birmingham, 2012.
- [7] "Website Accessibility Conformance Evaluation Methodology (WCAG-EM) 1.0," 2014.
- [8] "Tools For Web Developers," Google, [Online]. Available: <https://developers.google.com/web/tools/lighthouse/audits/description>. [Accessed 20th April 2019].