



# **Your website:**

## **Faster. A wider audience.**

## **Better user experience.**

## **A lower carbon footprint**

Leverage web performance outcomes to deliver both business and sustainability benefits.

Prepared for ...

# Web carbon and web performance.

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Websites generate carbon in their design, storage and use from electricity that is used to power each stage of their delivery including the servers, the networks and the devices you use to visit and view sites.

However, there are simple steps that can be taken to reduce carbon emissions and, even better, reducing your site's carbon footprint will also improve its performance and speed.

Changes such as using a hosting provider that uses renewable energy, reducing the size of images, the amount of code you send over the network and making your site easy to use and understand can reduce its carbon footprint.



Improving your website's performance, including its page speed has a number of business and visitor benefits including,

- Improved SEO outcomes, Google prefers faster sites
- Improved visitor engagement and time spent on site
- Lower bounce rates, visitors stay if a site loads fast

What is interesting is that the steps that can be taken to improve site performance also reduce a site's carbon footprint. And in many cases simple changes such as reducing image sizes can have a significant effect on both performance and carbon emissions. It also means that your site can be improved without changing the way it looks at all. All in all, a low hanging fruit that should be considered by all site owners.

# How was this report prepared?

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To prepare this report we have used various tools to analyse the page load of your website. The metrics and data from these tools were used to compile this report. These metrics are used to propose performance improvements and to estimate the outcomes of these improvements.

This report is only an overview of your site's performance. We offer a more detailed report service, please contact us for more information. A presentation with more information about our services and web performance is also available; please let us know if you haven't received this.



# What tests and methods were used?

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Along with manually viewing the web browser logs for your site Google Lighthouse tests were run as well as tests from Webpagetest, <https://www.webpagetest.org> and PageSpeed Insights, <https://pagespeed.web.dev/> were used. You can visit these sites to test your site separately as some of the tests are free. Results can vary from test to test; please let us know if we can help further.

Estimated carbon emissions are calculated using the model created by sustainable web design leaders as outlined on the Sustainable Web Design website<sup>1</sup>.

# Overview

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## Your site

Info on site

**Unknown**

visitors per month

**4.7 Mb**

Page weight of home page

**766Kb and 685Kb**

The two largest files. The first is a Javascript file for youtube. The second and image file.

## Performance

Site performance is

**Satisfactory**

and can be improved through reducing image sizes that are

**negatively affecting** performance and carbon.

Gains could be made by resizing and reformatting images, optimising how Javascript and some images are loaded.

## Carbon impact

The site generates

**1.66g**

of estimated carbon emissions per visit, with small changes could be less

Reducing page weight to

**2Mb**

would have significant results and could be possible through image and code optimisation.

# Your site

## Technology:

A bootstrap site not using green hosting

Requests: ~ 72 Desktop/  
76 Mobile Requests  
(Median global requests  
76/70 from HTTPArchive  
Web Almanac 2022)<sup>2</sup>

Page weight: ~ 4.7mb  
(Median global page  
weight 2.3Mb/2Mb from  
HTTPArchive Web  
Almanac 2022)<sup>2</sup>

Visitor stats:  
Unknown number of  
visitors per month

With estimated monthly  
visitor numbers annual  
totals can be calculated  
and the result is more  
understandable.

\* These statistics are from the  
Home page. Statistics may  
change from page to page.

## Page weight breakdown

Images were the largest component of  
the page at 3.2Mb transferred in 26  
requests

Javascript: 1.2Mb  
transferred in 18  
requests

Fonts: 126Kb transferred  
in 4 requests

3rd Party Requests: 41

\* These metrics depend on  
how a page is constructed  
and transferred. They  
directly affect the  
performance of the page.

CSS: 75Kb transferred in  
5 requests

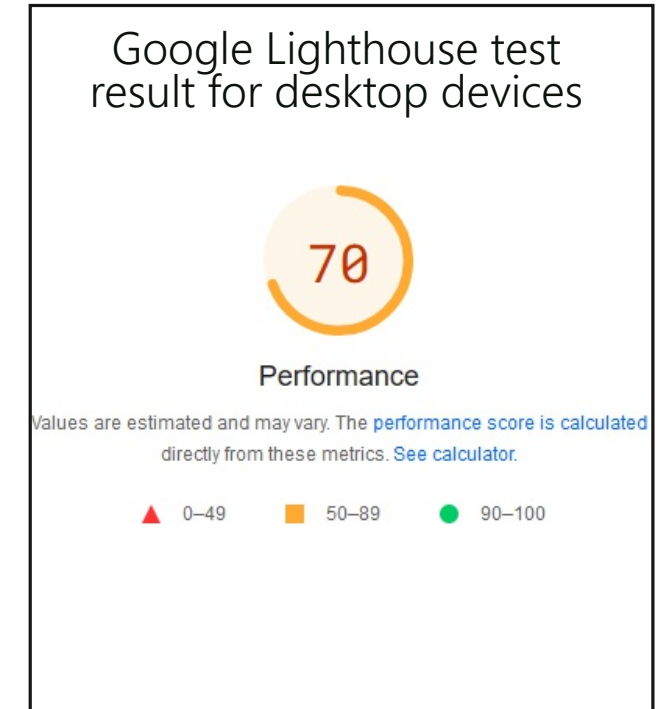
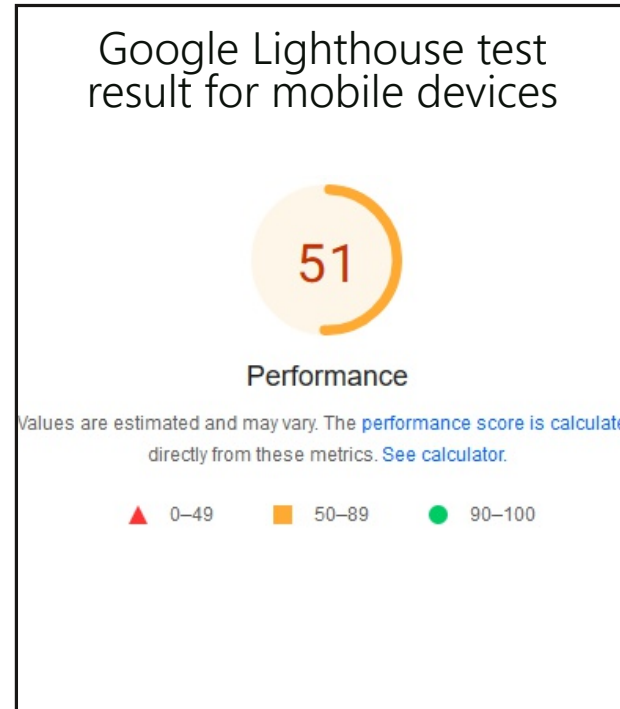
# Performance

## Site performance is **Satisfactory**

- Set a target of 75 to drive changes
- Optimising images will lead to better results

### Improvements can be made:

- Resize images to fit page sizes
- Reformat and compress images in modern formats
- Lazy load images that are not show in the first view so they are only loaded when needed
- Subset fonts to only use the characters required.
- Use a facade for youtube video to avoid loading Javascript until needed.
- I can help with all of these let me know if more information is required.



# Carbon impact



A web page of

**4.7Mb**

generates an estimated

**1.66g**

of carbon emissions per  
page view

The median tested page  
view figure by

Webpagetest.org is

**0.6g**

At (for example)

**2500**

visitors per month (75%  
first time and 25%  
returning visitors) the

annual estimated carbon  
emissions for this page are

**2.5kg**

similar to driving a car

**16 km**

## Reducing site carbon

- Page weight budgets can be an effective way to set goals for reducing carbon. A page budget of 2Mb (from 4.7Mb) would lead to a large carbon emission reduction.
- The biggest gain from this site is going to be from optimising images. Your site will look and function the same and your visitors will notice know any difference but your site's carbon emissions will be less.
- Another way would be to consider moving your site to a so-called 'green' host. Let me know if you would like to know more.

# Tips and resources

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## Tips for improving web performance and web carbon footprint

- Images should be compressed to be the smallest size without losing detail.
- One easy way to reduce the size of images is to resize them to be the correct size for the web page they are part of. For example, if the width of the web page is 1275px then the image should be sized to a maximum width of 1275px. For an image of 2000px width with a file size of 250kb resizing to 1275px width saves almost 50% file size. This saving improves performance and reduces carbon.
- Use something like Caesium Image Compressor for a quick and easy way to compress, reformat and resize images, <https://saerasoft.com/caesium>. Other compression software is available as well.
- Fonts add to page weight and can be removed altogether or subset. Subsetting is where a font only loads the letters and styles it needs not the whole font.

## Advanced tips

- Unused CSS and Javascript code directly affects performance and a site's carbon footprint as it is shipped but not used.
- 3rd party analytics and other code providers can send unoptimised code for the services that you use. This extra, unoptimised code can have significant effects on the performance of your site adding page weight and extra requests. If possible replace these with better services or only load on pages as absolutely necessary. Examples of this include Google Analytics and Hubspot services but these are by no means the only ones.
- Platforms such as Wordpress, Square and Wix, as an example can include extra code and functionality out of the box. If this extra functionality and code is not used or needed then it can be removed without affecting your site.





# Thank you

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Firstly, thanks for the opportunity to analyse your website page load for performance and carbon reduction opportunities. We hope this information is useful for your next steps with your site.

We are interested in continuing to work with and support you at <your organisation> to speed up your website and to reduce its carbon footprint. Let's keep talking.

Please let us know if you have any questions or need further information. Technical language in this field can be overwhelming but we are committed to clear, plain communication at all times.

Best,

Rob



# Further reading

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1. Calculating Digital Emissions, Sustainable Web Design  
<https://sustainablewebdesign.org/calculating-digital-emissions/>.
2. Web Almanac, HTTP Archive, Part IV Chapter 21 Page Weight  
<https://almanac.httparchive.org/en/2022/page-weight>
3. Light vehicle emissions intensity in Australia, National Transport Commission  
<https://www.ntc.gov.au/light-vehicle-emissions-intensity-australia>