Centre for Accessibility Australia

AUSTRALIA

Celebrating an inclusive world

Centre for Accessibility Australia

HIGHER EDUCATION FOR ALL

Final Report
June 2022

Addressing key accessibility issues faced by current and prospective students with disability

Government of Western Australia
Department of **Communities**
Disability Services

About Centre for Accessibility Australia

The Centre for Accessibility (CFA) Australia is an award-winning disability-led not-for-profit organisation that works to promote digital access.

The digital world is an amazing resource that all of us increasingly rely on; however, the reality for people living with disability is that much of the internet remains inaccessible. CFA Australia coordinates several projects designed to reduce the accessibility gap and empower organisations to effectively implement accessibility.

1. We provide training for organisations and individuals looking to implement accessibility.
2. We provide website auditing services for organisations looking to access and improve their accessibility.
3. We develop free, highly accessible online resources for content creators and organisations to promote and respond to digital access.
4. We create free online resources for people with disabilities on how to use Assistive Technology (AT). These resources will include how-to guides for AT, product advice about AT, and a free helpdesk that provides information and assistance about AT for people with disabilities.
5. We advocate and promote the accessibility movement via our accessibility campaign. The purpose of the campaign is to empower and encourage digital content developers to implement accessibility when designing online resources.
6. We celebrate accessibility success stories through the biannual Accessibility Awards.

Acknowledgements

Contents

Executive Summary

The Higher Education for All project was undertaken by CFA Australia as a Western Australia Government Department of Communities funded advocacy project. The project supports current and prospective students in the higher education sector by addressing critical digital accessibility issues across five WA university websites.

CFA Australia audited the websites of Curtin University, The University of Notre Dame Australia, The University of Western Australia (UWA), Murdoch University and Edith Cowan University (ECU) in accordance with the Web Content Accessibility Guidelines (WCAG) 2.1 Level AA standard. The results of the audits, along with feedback from current and prospective students with disability, highlight common accessibility issues across all websites, including those to do with colour contrast, poor navigation and heading structure, PDF accessibility and visible focus. In addition, students commented on the need for an accessible map and improved options for contacting universities, either for disability-specific support, or to raise complaints about digital access.

Recommendations for improvement are as follows:

1. All universities need to address the issues raised in their respective audit reports, striving for WCAG 2.1 Level AA compliance.

2. Websites and apps should be audited on a regular basis to ensure that accessibility improvements are maintained.

3. Students with a disability should have the choice to undertake their classes by face-to-face or online as best supports their needs.

4. Prospective and current students should have multiple contact channels to assist them in contacting universities with disability-specific questions about study.

5. Campus maps need to be helpful for people with mobility impairment or use of a wheelchair and should be provided in an accessible format.

6. Learning Management Systems should ensure that there is a consistent layout colour and style between subjects to improve the accessibility of the interface.

As digital accessibility is not well understood across university staff, CFA Australia recommends ongoing training to raise awareness of digital accessibility. By making it easier for people with disability to find critical information, universities can better support existing and prospective students to engage with their learning.

While this project excludes Technical and Further Education (TAFE) institutes and Registered Training Organisations (RTOs), being the first of its kind in Australia, this study provides critical benchmarking data that will become more applicable to other higher education institutes as CFA Australia continues its work across this sector.

1.0 Introduction

1.1 Why this project is important

The [Australian Human Rights commission](#) states that there are nearly four million Australians with some form of permanent disability. Among these, 28.5% (or 1.1 million) people had not accessed the internet in the previous three months, and this figure decreases with age, similar to the general population. The main reasons cited for not using the internet include a lack of confidence/knowledge, particularly among people with disabilities that affect cognitive ability.

Early research by [Hollier (2006)](#) suggests that the disability divide and digital divide are inextricably linked:

As society continues to become more reliant on information technology, there is a dangerous probability that a key disability group will find it increasingly difficult to operate equitably in society.

More to the point, Hollier argues that disability can limit the extent of education that can be achieved, and this lays the foundation for even more difficulty in gaining full participation in employment. It is also likely that people with disability have a range of disability-related expenses, such as purchasing specialised equipment and training to use assistive technologies, which

further diminishes their capacity to afford up-to-date computers and software that are essential for completing their studies.

It goes without saying that people with disability continue to be disadvantaged in terms of their access to, and participation in, higher education. As noted by the [Australian Bureau of Statistics](#), only 18.4 per cent of Australians with disability aged 15-64 have a bachelor degree or higher, compared to 32.8 per cent for people without disability.

In addition, fewer people with disability participate in the workforce than those without disability. According to the [Australian Human Rights Commission](#), only 53.2 per cent of people with disability participated in the labour force as compared to 80.6 per cent of those without a disability. Since 1993, the labour force participation rate of people with disabilities has fallen, while the rate for people without disabilities has risen.

Extensive research by [Hollier (2006)](#) and [Conway (2014)](#) shows that a significant factor relating to this disability divide is the accessibility of digital content, particularly with regard to website design. For example, screen readers and other assistive technologies can read text on a screen but cannot 'read' images. This can prevent students with vision impairments from accessing information on flowcharts, schematics, graphs, maps, menu buttons, and infographics. People requiring reading assistance devices commonly scan for identifiable hyperlinks, which may not show up if they are not formatted clearly.

Lastly, accessibility is not just a question of inclusivity; it is a legal requirement under the AHRC World Wide Web Access: Disability Discrimination Act Advisory Notes ver. 4.1 (2014), which supports international web accessibility standards. Complaints fall under Section 24 of the Disability Discrimination Act 1992.

Dr. Scott Hollier

1.2 Project overview

The Higher Education for All project was created in direct response to requests from people with disability – 27 current and prospective students – who contacted CFA Australia with feedback on various challenges in navigating university websites.

In relation to prospective student experiences, most acknowledged that finding basic information online was relatively successful but took perseverance. The main challenge raised was that information was not located in an intuitive place, and the options to contact the institution for further information were limited, both in terms of general contact and disability-specific contacts. These students suggested that a variety of contact information to find out disability-specific information - including email, phone, a chat window, and social media - would be helpful.

Confident that it could address the issues raised, CFA Australia designed a program of work to provide auditing, training, and consultancy services to five WA universities. To support the project, CFA Australia applied for a grant made available by the WA Government, Department of Communities to support advocacy projects for people with disability.

In 2021, CFA Australia received confirmation that it had been successful in its application. The Universities for All project was undertaken over a 12 month period, beginning in the second half of 2021.

1.3 Aims and objectives

This project aims to support the WA higher education sector in making its content more accessible. To do this, CFA Australia audited the websites of five WA universities:

- University of Western Australia
- Murdoch University
- Curtin University
- Edith Cowan University
- The University of Notre Dame Australia

The project addresses digital accessibility issues by:

- providing positive, independent and proactive support to universities on how to address their web accessibility issues;
- developing online resources to help students to use assistive technologies on their devices; and
- making the general findings and 'quick wins' available for other higher education providers.

1.4 Project deliverables

The deliverables of this project include:

- an accessibility audit of the five universities' websites;
- a written report on the audit findings to inform participating universities of any improvements required;
- one professional development training workshop for information and communications technology staff from the five universities;
- one professional development training workshop for communications staff from the five universities;
- development of a roadmap for each university to address accessibility issues;
- videos produced for the promotion of student accessibility resources via social media;
- accessibility resource to inform students about the accessibility features on common electronic devices; and
- a public report bringing together the findings from the five audits undertaken, showing the common issues and the steps needed to ensure that current and prospective students with disability can effectively pursue their education.

2.0 Auditing processes

Based on feedback from staff at the universities, approximately 20 sample pages were selected from each university's website. For prospective students, the selection was based on public-facing webpages such as the home page, and pages containing information about course offerings, university facilities, contact information and enrolment processes. For current students, sample pages included information about library services, administration services, student services and student help information.

2.1 The World Wide Web Consortium Web Content Accessibility Guidelines

The audits in this project have been conducted in accordance with the standards provided by the World Wide Web Consortium (W3C). The W3C is an international community founded in 1994 whereby member organisations, full-time staff, and public participants work together to develop web standards led by the World Wide Web's inventor, Sir Tim Berners-Lee, and W3C CEO, Jeffrey Jaffe.

While the web revolutionised information and communication, the way in which information was presented was often incompatible with Assistive Technology products. As such, in 1997 the W3C launched the Web Accessibility Initiative (WAI) to ensure that people with disability were able to effectively access online information. This led to the creation of the Web Content Accessibility Guidelines (WCAG), designed to provide guidance to ICT professionals as to how content can be made accessible.

The current version of the standard at the time of writing is WCAG 2.1, published in 2018. WCAG 2.1 consists of four design principles – Perceivable, Operable, Understandable and Robust (POUR) – which in turn consist of 13 guidelines. WCAG is also recognised by the International Organization for Standardization (ISO) as standard ISO/IEC 40500, cementing its importance as the definitive world accessibility standard.

An overview of the four design principles and the thirteen guidelines are highlighted in the WCAG 2.1 At A Glance document which defines them as follows:

Perceivable

- Provide text alternatives for non-text content.
- Provide captions and other alternatives for multimedia.
- Create content that can be presented in different ways, including by assistive technologies, without losing meaning.
- Make it easier for users to see and hear content.

Operable

- Make all functionality available from a keyboard.
- Give users enough time to read and use the content.
- Do not use content that causes seizures.
- Help users navigate and find content.
- Make it easier to use inputs other than keyboard.

Understandable

- Make text readable and understandable.
- Make content appear and operate in predictable ways.
- Help users avoid and correct mistakes.

Robust

- Maximise compatibility with current and future user tools.

Within each of the guidelines are success criteria which provide specific, practical pass and fail guidance for website testing. This audit is assessed against the success criteria to provide information as to what web accessibility issues are present on your site and how best to address them.

2.2 Website Accessibility Conformance Evaluation Methodology (WCAG-EM) 1.0

To ensure that the audits were conducted in a professional manner, all auditing processes were undertaken on both desktop and mobile platforms, and followed in accordance with the [Website Accessibility Conformance Evaluation Methodology (WCAG-EM)](#). This is an approach created by W3C WAI for determining how well a website conforms to the WCAG standard. WCAG-EM 1.0 recommends structuring audit reports based on the following five-step evaluation procedure:

- [Step 1: Define the Evaluation Scope](#)
- [Step 2: Explore the Target Website](#)
- [Step 3: Select a Representative Sample](#)
- [Step 4: Audit the Selected Sample](#)
- [Step 5: Report the Evaluation Findings](#)

2.3 Baseline

All tests were carried out by CFA Australia's disability-led auditing team. All tools were the latest versions as of January 2022 unless otherwise stated. Baseline measures were established to ensure results are consistent across the different audits. This includes:

- Conformance target:
  › Web Content Accessibility Guidelines 2.1 Level AA
- Operating systems:
  › Windows 10 desktop, (latest built)
  › Windows 11 desktop
  › MacOS 12.0 desktop
  › iOS 15 Apple iPhone
  › Android 12.0 smartphone
- Browsers:
  › Microsoft Edge (Chromium) on Windows 11
  › Chrome on Windows 10
  › Safari on macOS
  › Mozilla Firefox on macOS
  › Safari on iOS
  › Chrome on Android

- Assistive technologies:
  › Narrator screen reader on Windows 11
  › NVDA screen reader on Windows 10
  › Magnifier on Windows 11
  › High Contrast Aqua colour theme on Windows 11
  › Dragon Naturally Speaking Pro on Windows 10
  › VoiceOver screen reader on MacOS,
  › VoiceOver screen reader on iOS
  › TalkBack screen reader on Android
- Assessment tools:
  › SortSite
  › WAVE extension for Chrome
  › Axe extension for Chrome
  › W3C validator
- TalkBack screen reader on Android
  › Assessment tools:
  › SortSite
  › WAVE extension for Chrome
  › Axe extension for Chrome
  › W3C validator

The selection of devices and software for this audit was based on a typical off-the-shelf configuration. This is important as ideally a person with a disability should be able to simply purchase a device and access the content. The exceptions for this include the use of Dragon speech-to-text software as the built-in tools for Windows are still fairly limited for this feature, and the addition of the NVDA screen reader due to it being popular and freely available.

Most of the universities recognised the importance of digital accessibility.

3.0 Audit findings

3.1 Website findings

The audit achieved some consistent findings across all five university websites:

1

All of the websites can be improved in terms of accessibility.

3

Where knowledge is present, there are some accessibility issues slipping through existing processes, particularly alternative text.

2

There is some accessibility knowledge present among university staff, and where internal knowledge is not as prevalent, there is an awareness that improvements need to be made.

4

There are some major accessibility issues which do not appear to be known among university staff, requiring additional processes to be added. Many of these were highlighted in both testing and in student feedback.

4.0 Key Issues

4.1 Colour contrast

Under WCAG 2.1 Level AA, there is a requirement for a 4.5:1 colour contrast ratio to be met. The websites tested had issues relating to colour contrast throughout the sample selection. As a result, people with colour vision impairment would likely have difficulty viewing the content. In addition, user interface elements also need a 3:1 colour contrast ratio to ensure that navigation has support for people with a colour vision impairment. Checking the colour contrast is a significant issue shared across the sector.

4.2 Navigation

WCAG 2.1 Success Criteria that relate to navigation include the need to ensure there is consistent navigation available, that headings are well structured, labels are present and there are multiple ways to navigate. All of the websites presented challenges in user testing. Some of the issues include a lack of labels that identify different areas of the website and poor hearing structure. Ensuring that prospective and current students with disability have a consistent experience navigating around website content needs to be operable, intuitive and effective.

4.3 Link purpose

Most of the tested websites contained links or buttons that were not descriptive. If links are not descriptive screen readers and other assistive technology users will come across the text in the link and not understand its context. For example, links that simply say 'read more' or 'click here' do not provide enough information for the user to understand what the link will do. This is mainly an issue in news content and other articles where more information is available through a 'read more' link.

4.4 Focus visible

Another issue for all the tested websites relates to visible focus. As focus shifts across web content, the focus must be visible so that both sighted and non-sighted learners can understand where the current focus is. This issue is likely to become even more significant as the upcoming WCAG 2.2 updated standard draft features additional guidance on the importance of focus visible and the contrast required for it. Ensuring that all focus areas are visible is critical in supporting all users to understand what content is currently being accessed at a point in time.

4.5 Code validation

Most of the tested websites do not have code that correctly validates to W3C HTML standards and some websites also have issues with CSS validation. Using code that does not validate correctly can cause assistive technologies to perform erratically and may account for some of the issues highlighted in the report.

4.6 PDF documents

Samples of PDF documents suggest that PDF documents are not generally created with accessibility in mind. PDF documents can also be created to conform to the WCAG 2.1 Level AA standard and as such should be checked for accessibility. This issue is confirmed in the student feedback below.
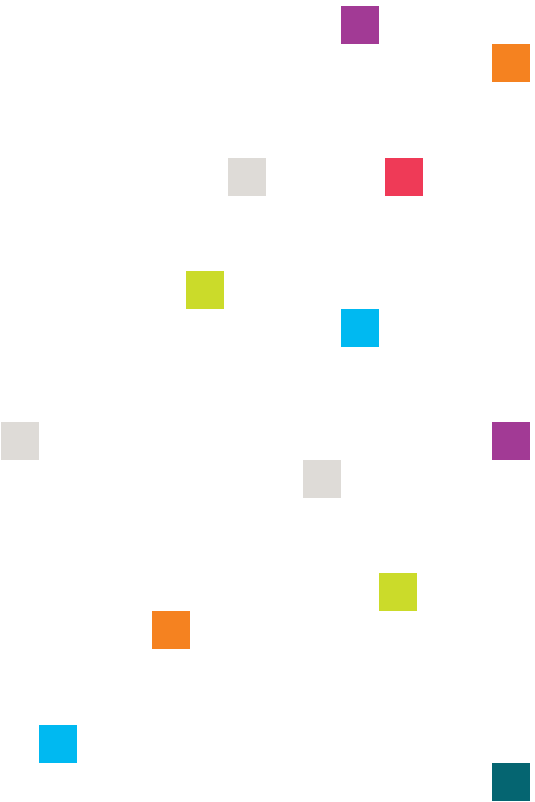
5.0 Scorecards

Early conversations with university staff highlighted concerns about how public the results would be made, and curiosity as to how each university ranked compared to the others. To find a balance between the need to share sector information and the specific technical details of the audits, this report contains the overall scorecard of each audit, a comparison of each WCAG 2.1 Level AA Success Criteria in Appendix A, and a copy of the executive summary for each audit in Appendix B. The full audit reports will not be publicly available, as they are intended for the universities to address specific accessibility issues internally.

The overall scorecard for the websites is as follows:

Institution	Pass	N/A	Total Percentage
Curtin	50	18	68%
ECU	52	18	70%
Murdoch	60	10	70%
Notre Dame	42	4	46%
UWA	63	4	67%

Audit Report – Overall Scorecard Percentages (April 2022)

Based purely on the WCAG 2.1 Level AA assessments, the results are comparable among Murdoch, UWA, Curtin and ECU websites. The Notre Dame website was somewhat behind the others in its accessibility. However with the highest score being 70%, all universities have some way to go in meeting WCAG 2.1 Level AA compliance.

WWhile the WCAG scores provide technical guidance as to which websites are the most accessible, user testing suggested a different ranking order. Based on the user experience, Curtin's website was considered far more accessible than the others in terms of digital accessibility. This is generally credited to many of the issues being occasional rather than prevalent, and the relatively 'clean' structure of Curtin's primary front-facing content. The ECU, UWA and Murdoch websites were all considered similar in terms of accessibility, with the Notre Dame website being the least accessible.

It is important to note that different disability groups will have different experiences. For example, a website that does not have captions on its videos will have a greater impact on a person who is Deaf. As such, all rankings should be considered in context.

Also, if less prevalent issues were addressed, the rankings of all websites would likely increase by 10%-15% in the rankings as the current version of WCAG 2.1 does not consider the prevalence or impact of accessibility issues.
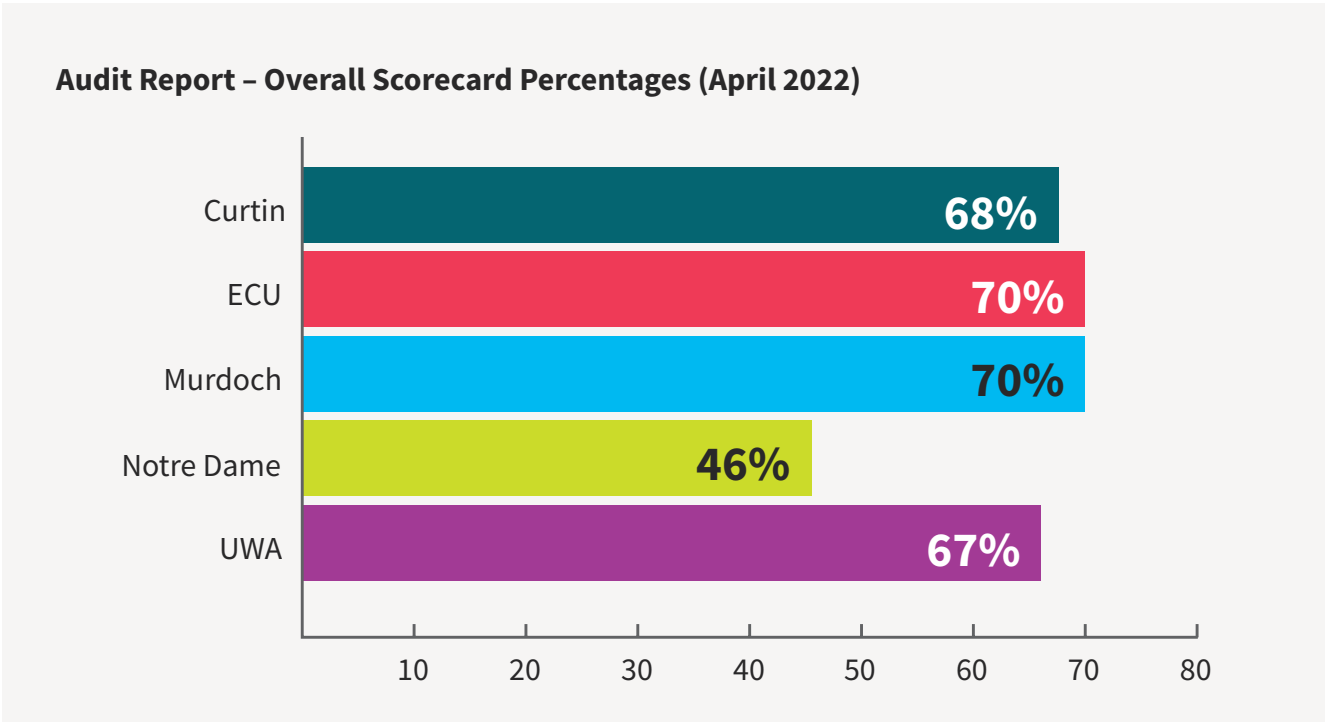
6.0 Student Feedback

While analyses of public-facing web pages are critical to understanding accessibility challenges for prospective students, enrolled students with disability can provide important insights into the ways in which these challenges impacted the overall university experience. To understand these experiences, CFA Australia invited a focus group of 9 students with disability, primarily from UWA and Curtin, to share some feedback and suggestions.

Due to COVID-19 resulting in significant changes to university processes, much of the focus group discussions revolved around the importance of online content. There was broad acknowledgement that online learning was beneficial, as content was always available and there were more channels available for communicating with unit coordinators. The ability to access information on devices already set up with assistive technologies was seen as a benefit.

There was also an acknowledgement that the auto-transcription service was very helpful.

However, existing digital access challenges compromised some of these benefits. There was some resentment when online support was removed when face-to-face classes returned. Some students who relied on online learning due to their access needs were not given the same level of engagement as other students after classes returned, and some perceived unit coordinators saw them as lazy for preferring to stay online. Another comment was the habit of lecturers not using their microphones to share something off-the-record in class, which prevented online students from accessing certain types of content deemed important.

There were several issues raised concerning the Learning Management System (LMS) which was generally consistent with the use of BlackBoard Ultra. Common complaints included the constant changing of navigation structure in each unit rather than keeping the layout consistent between subjects, often making it difficult to navigate. Colour contrast was also flagged as a key issue both in terms of a lack of consistency between subjects and poor contrast overall and non-descriptive links such as 'click here' and 'read more' were difficult for screen reader users. Some students also raised the challenge of the LMS not being used correctly, as content was sometimes placed into one large, inaccessible PDF, rather than using the LMS to structure modules, assignments, and due dates.

The most significant issue shared by both prospective and current students was the lack of access to a campus wheelchair or mobility accessibility map. Students commented that it is very difficult to find a campus map on the websites. Third-party maps are generally difficult to use; as they are unofficial, there is no responsibility for their accuracy, and they are often in an inaccessible PDF format. Several students commented on other mobility challenges around classroom location and the lack of a digital interface to effectively convey the need for classes to be in an accessible room.

In essence, most digital access issues for students could be resolved if the website and LMS content conformed to the WCAG 2.1 standard, a consistent layout template was used inside the LMS, additional ways to contact the university were provided for prospective and current students with disability and an accessible wheelchair and mobility campus map were provided.

7.0 Reception

One of the key challenges of this project was engaging with universities in the first instance. Most of the staff that were initially contacted by CFA Australia recognised the general importance of digital accessibility, however concerns were raised about what data would be shared publicly, and whether the report could make the universities 'look bad.' ICT staff also considered the financial implications of the extra work that would come from a full digital audit.

The challenges in engaging with university staff about this project highlight difficulties faced by students with a disability who wish to lodge digital access complaints, as noted in the student feedback. As such, it is recommended that all universities review their contact procedures to ensure there is a clear path of communication to receive complaints and address them.

While there was some initial wariness as to the overall purpose of the project, all participating university staff have been pro-active in understanding and addressing the issues that were identified. CFA Australia expects to strengthen these results through an upcoming sector-wide workshop.

...all participating universities have been pro-active in investigating and addressing the issues that were identified.

8.0 Conclusion

The Higher Education for All project supports current and prospective students with disability in WA by addressing digital access issues across five WA universities.

The results of the audits, as well as student feedback, highlight common accessibility issues for all participating universities, including those to do with colour contrast, poor navigation, heading structure, PDF accessibility and visible focus. In addition, students commented on the need for an accessible map and improved options for contacting universities, either for disability- specific support or to raise complaints about digital access. The findings indicate a need for tightened processes around digital accessibility and additional training to promote better awareness of digital accessibility.

All participating university teams express a commitment to addressing the issues raised, which is very encouraging. If CFA Australia's recommendations are successfully implemented and maintained, it is our view that university experience will improve significantly for current and prospective students with disability.

Appendix A:
Results against the WCAG 2.1 Level AA Success Criteria

Principle 1: Perceivable
Information and users interface components must be presentable to users in ways they can perceive.

	Curtin University	Edith Cowan University	Murdoch University	Notre Dame University Australia	University of Western Australia
Non-text Content: 1.1.1 All non-text content that is presented to the user has a text alternative that serves the equivalent purpose, except for the situations listed below. **(Level A)**	Pass	Fail	Fail	Fail	Fail
Audio-only and Video-only (Pre-recorded): 1.2.1 For pre-recorded audio-only and pre-recorded video-only media, the following are true, except when the audio or video is a media alternative for text and is clearly labelled as such: Understanding Success Criterion 1.2.1 **Pre-recorded Audio-only:** An alternative for time-based media is provided that presents equivalent information for pre-recorded audio-only content. **Pre-recorded Video-only:** Either an alternative for time-based media or an audio track is provided that presents equivalent information for pre-recorded video-only content. **(Level A)**	NA	NA	NA	Fail	Fail
Captions (Pre-recorded): 1.2.2 Captions are provided for all pre-recorded audio content in synchronized media, except when the media is a media alternative for text and is clearly labelled as such. **(Level A)**	Fail	Fail	Pass	Fail	Fail
Audio Description or Media Alternative (Pre-recorded): 1.2.3 An alternative for time-based media or audio description of the pre-recorded video content is provided for synchronized media, except when the media is a media alternative for text and is clearly labelled as such. **(Level A)**	Fail	NA	NA	Fail	Fail
Captions (Live): 1.2.4 Captions are provided for all live audio content in synchronized media. **(Level AA)**	NA	NA	NA	NA	NA
Audio Description (Pre-recorded): 1.2.5 Audio description is provided for all pre-recorded video content in synchronized media. **(Level AA)**	Fail	NA	NA	Fail	NA
Info and Relationships: 1.3.1 Information, structure, and relationships conveyed through presentation can be programmatically determined or are available in text. **(Level A)**	Pass	Fail	Pass	Fail	Fail
Meaningful Sequence: 1.3.2 When the sequence in which content is presented affects it's meaning, a correct reading sequence can be programmatically determined. **(Level A)**	Pass	Pass	Pass	Fail	Pass
Sensory Characteristics: 1.3.3 Instructions provided for understanding and operating content do not rely solely on sensory characteristics of components such as shape, size, visual location, orientation, or sound. **(Level A)**	Pass	Fail	Pass	Pass	Fail

Principle 1: Perceivable
Information and users interface components must be presentable to users in ways they can perceive.

	Curtin University	Edith Cowan University	Murdoch University	Notre Dame University Australia	University of Western Australia
Orientation: 1.3.4 Content does not restrict its view and operation to a single display orientation, such as portrait or landscape, unless a specific display orientation is essential. **Note:** Examples where a particular display orientation may be essential are a bank check, a piano application, slides for a projector or television, or virtual reality content where binary display orientation is not applicable. **(Level AA)**	Fail	Pass	Pass	Fail	Pass
Identify Input Purpose: 1.3.5 The purpose of each input field collecting information about the user can be programmatically determined when: • The input field serves a purpose identified in the Input Purposes for User Interface Components section; and • The content is implemented using technologies with support for identifying the expected meaning for form input data. **(Level A)**	Fail	Pass	Pass	Fail	Fail
Use of Colour: 1.4.1 Colour is not used as the only visual means of conveying information, indicating an action, prompting a response, or distinguishing a visual element. **(Level A)**	Fail	Fail	Fail	Fail	Pass
Audio Control: 1.4.2 If any audio on a Web page plays automatically for more than 3 seconds, either a mechanism is available to pause or stop the audio, or a mechanism is available to control audio volume independently from the overall system volume level. **(Level A)**	Pass	Pass	Pass	Pass	Pass
Contrast (Minimum): 1.4.3 The visual presentation of text and images of text has a contrast ratio of at least 4.5:1, except for the following: Large Text: Large-scale text and images of large-scale text have a contrast ratio of at least 3:1; Incidental: Text or images of text that are part of an inactive user interface component, that are pure decoration, that are not visible to anyone, or that are part of a picture that contains significant other visual content, have no contrast requirement. Logotypes: Text that is part of a logo or brand name has no minimum contrast requirement **(Level AA)**	Fail	Fail	Fail	Fail	Pass
Resize Text: 1.4.4 Except for captions and images of text, text can be resized without assistive technology up to 200 percent without loss of content or functionality. **(Level AA)**	Pass	Fail	Pass	Pass	Pass
Images of Text: 1.4.5 If the technologies being used can achieve the visual presentation, text is used to convey information rather than images of text except for the following: Understanding Success Criterion 1.4.5 • Customisable: The image of text can be visually customised to the user's requirements; • Essential: A particular presentation of text is essential to the information being conveyed. **Note:** Logotypes (text that is part of a logo or brand name) are considered essential. **(Level AA)**	Pass	Fail	Pass	Fail	Fail

Principle 1: Perceivable
Information and users interface components must be presentable to users in ways they can perceive.

	Curtin University	Edith Cowan University	Murdoch University	Notre Dame University Australia	University of Western Australia
Reflow: 1.4.10 Content can be presented without loss of information or functionality, and without requiring scrolling in two dimensions for: • Vertical scrolling content at a width equivalent to 320 CSS pixels; • Horizontal scrolling content at a height equivalent to 256 CSS pixels. • Except for parts of the content which require two-dimensional layout for usage or meaning. **Note 1:** 320 CSS pixels is equivalent to a starting viewport width of 1280 CSS pixels wide at 400% zoom. For web content which are designed to scroll horizontally (e.g., with vertical text), the 256 CSS pixels is equivalent to a starting viewport height of 1024px at 400% zoom. **Note 2:** Examples of content which require two-dimensional layout are images, maps, diagrams, video, games, presentations, data tables, and interfaces where it is necessary to keep toolbars in view while manipulating content. **(Level AA)**	Fail	Pass	Pass	Pass	Pass
Non-text Contrast: 1.4.11 The visual presentation of the following have a contrast ratio of at least 3:1 against adjacent colour(s): • User Interface Components: Visual information required to identify user interface components and states, except for inactive components or where the appearance of the component is determined by the user agent and not modified by the author; • Graphical Objects: Parts of graphics required to understand the content, except when a particular presentation of graphics is essential to the information being conveyed. **(Level AA)**	Pass	Fail	Fail	Fail	Pass
Text Spacing: 1.4.12 In content implemented using markup languages that support the following text style properties, no loss of content or functionality occurs by setting all of the following and by changing no other style property: • Line height (line spacing) to at least 1.5 times the font size; • Spacing following paragraphs to at least 2 times the font size; • Letter spacing (tracking) to at least 0.12 times the font size; • Word spacing to at least 0.16 times the font size. **Exception:** Human languages and scripts that do not make use of one or more of these text style properties in written text can conform using only the properties that exist for that combination of language and script. **(Level AA)**	Pass	Pass	Pass	Pass	Pass

Principle 1: Perceivable
Information and users interface components must be presentable to users in ways they can perceive.

Content on Hover or Focus:

1.4.13 Where receiving and then removing pointer hover or keyboard focus triggers additional content to become visible and then hidden, the following are true:

- Dismissible: A mechanism is available to dismiss the additional content without moving pointer hover
- or keyboard focus, unless the additional content communicates an input error or does not obscure or replace other content;
- Hoverable: If pointer hover can trigger the additional content, then the pointer can be moved over the additional content without the additional content disappearing;
- Persistent: The additional content remains visible until the hover or focus trigger is removed, the user dismisses it, or its information is no longer valid.

Exception: The visual presentation of the additional content is controlled by the user agent and is not modified by the author.

Note 1: Examples of additional content controlled by the user agent include browser tooltips created through use of the HTML title attribute.

Note 2: Custom tooltips, sub-menus, and other nonmodal popups that display on hover and focus are examples of additional content covered by this criterion.

(Level AA)

	Curtin University	Edith Cowan University	Murdoch University	Notre Dame University Australia	University of Western Australia
1.4.13	Pass	Pass	Pass	Pass	Pass

Principle 2: Operable
User interface components and navigation must be operable.

Keyboard:

2.1.1 All functionality of the content is operable through a keyboard interface without requiring specific timings for individual keystrokes, except where the underlying function requires input that depends on the path of the user's movement and not just the endpoints.

Note 1: This exception relates to the underlying function, not the input technique. For example, if using handwriting to enter text, the input technique (handwriting) requires path-dependent input, but the underlying function (text input) does not.

Note 2: This does not forbid and should not discourage providing mouse input or other input methods in addition to keyboard operation.

(Level A)

No Keyboard Trap:

2.1.2 If keyboard focus can be moved to a component of the page using a keyboard interface, then focus can be moved away from that component using only a keyboard interface, and, if it requires more than unmodified arrow or tab keys or other standard exit methods, the user is advised of the method for moving focus away.

Note: Since any content that does not meet this success criterion can interfere with a user's ability to use the whole page, all content on the Web page (whether it is used to meet other success criteria or not) must meet this success criterion.

(Level A)

	Curtin University	Edith Cowan University	Murdoch University	Notre Dame University Australia	University of Western Australia
2.1.1	Fail	Fail	Pass	Fail	Pass
2.1.2	Pass	Pass	Pass	Pass	Pass

Principle 2: Operable
User interface components and navigation must be operable.

Character Key Shortcuts

2.1.4 If a keyboard shortcut is implemented in content using only letter (including upper- and lower-case letters), punctuation, number, or symbol characters, then at least one of the following is true:

- Turn off: A mechanism is available to turn the shortcut off;
- Remap: A mechanism is available to remap the shortcut to use one or more non-printable keyboard characters (e.g., Ctrl, Alt, etc);
- Active only on focus: The keyboard shortcut for a user interface component is only active when that component has focus.

(Level A)

Timing Adjustable:

2.2.1 For each time limit that is set by the content, at least one of the following is true:

Turn off: The user is allowed to turn off the time limit before encountering it; or

Adjust: The user is allowed to adjust the time limit before encountering it over a wide range that is at least ten times the length of the default setting; or

Extend: The user is warned before time expires and given at least 20 seconds to extend the time limit with a simple action (for example, "press the space bar"), and the user is allowed to extend the time limit at least ten times; or

Real-time Exception: The time limit is a required part of a real-time event (for example, an auction), and no alternative to the time limit is possible; or

Essential Exception: The time limit is essential and extending it would invalidate the activity; or

20 Hour Exception: The time limit is longer than 20 hours.

Note: This success criterion helps ensure that users can complete tasks without unexpected changes in content or context that are a result of a time limit. This success criterion should be considered in conjunction with Success Criterion 3.2.1, which puts limits on changes of content or context as a result of user action.

(**Level A**)

Three Flashes or Below Threshold:

2.3.1 Web pages do not contain anything that flashes more than three times in any one second period, or the flash is below the general flash and red flash thresholds.

Note: Since any content that does not meet this success criterion can interfere with a user's ability to use the whole page, all content on the Web page (whether it is used to meet other success criteria or not) must meet this success criterion.

(Level A)

Bypass Blocks:

2.4.1 A mechanism is available to bypass blocks of content that are repeated on multiple Web pages.

(Level A)

Page Titled:

2.4.2 Web pages have titles that describe topic or purpose.

(Level A)

	Curtin University	Edith Cowan University	Murdoch University	Notre Dame University Australia	University of Western Australia
2.1.4	NA	Pass	Pass	Pass	Pass
2.2.1	NA	NA	Pass	Pass	Pass
2.3.1	Pass	Pass	Pass	Pass	Pass
2.4.1	Pass	Pass	Fail	Pass	Fail
2.4.2	Pass	Pass	Pass	Fail	Pass

Principle 2: Operable
User interface components and navigation must be operable.

	Curtin University	Edith Cowan University	Murdoch University	Notre Dame University Australia	University of Western Australia
Pause, Stop, Hide: 2.2.2 **For moving,** blinking, **scrolling, or auto-updating information, all of the following are true:** Understanding Success Criterion 2.2.2 **Moving, blinking, scrolling**: For any moving, blinking or scrolling information that (1) starts automatically, (2) lasts more than five seconds, and (3) is presented in parallel with other content, there is a mechanism for the user to pause, stop, or hide it unless the movement, blinking, or scrolling is part of an activity where it is essential; and **Auto-updating:** For any auto-updating information that (1) starts automatically and (2) is presented in parallel with other content, there is a mechanism for the user to pause, stop, or hide it or to control the frequency of the update unless the auto-updating is part of an activity where it is essential. **Note 1:** For requirements related to flickering or flashing content, refer to Guideline 2.3. **Note 2:** Since any content that does not meet this success criterion can interfere with a user's ability to use the whole page, all content on the Web page (whether it is used to meet other success criteria or not) must meet this success criterion. **Note 3:** Content that is updated periodically by software or that is streamed to the user agent is not required to preserve or present information that is generated or received between the initiation of the pause and resuming presentation, as this may not be technically possible, and in many situations could be misleading to do so. **Note 4:** An animation that occurs as part of a preload phase or similar situation can be considered essential if interaction cannot occur during that phase for all users and if not indicating progress could confuse users or cause them to think that content was frozen or broken. **(Level A)**	NA	Pass	Fail	Fail	Pass
Focus Order: If a Web page can be navigated sequentially and the navigation sequences affect meaning or operation, focusable components receive focus in an order that preserves meaning and operability. **(Level A)**	Pass	Pass	Pass	Pass	Pass
Link Purpose (In Context): 2.4.4 The purpose of each link can be determined from the link text alone or from the link text together with its programmatically determined link context, except where the purpose of the link would be ambiguous to users in general. **(Level A)**	Fail	Fail	Fail	Fail	Pass
Multiple Ways: 2.4.5 More than one way is available to locate a Web page within a set of Web pages except where the Web Page is the result of, or a step in, a process. **(Level AA)**	Pass	Pass	Pass	Pass	Pass
Headings and Labels: 2.4.6 Headings and labels describe topic or purpose. **(Level AA)**	Fail	Pass	Fail	Fail	Fail

Principle 2: Operable
User interface components and navigation must be operable.

	Curtin University	Edith Cowan University	Murdoch University	Notre Dame University Australia	University of Western Australia
Focus Visible: 2.4.7 Any keyboard operable user interface has a mode of operation where the keyboard focus indicator is visible. **(Level AA)**	Fail	Fail	Fail	Fail	Fail
Pointer Gestures 2.5.1 All functionality that uses multipoint or path-based gestures for operation can be operated with a single pointer without a path-based gesture, unless a multipoint or path-based gesture is essential. **Note:** This requirement applies to web content that interprets pointer actions (i.e., this does not apply to actions that are required to operate the user agent or assistive technology). **(Level A)**	Pass	Pass	Pass	Pass	Pass
Pointer Cancellation 2.5.2 For functionality that can be operated using a single pointer, at least one of the following is true: • No Down-Event: The down-event of the pointer is not used to execute any part of the function; • Abort or Undo: Completion of the function is on the up-event, and a mechanism is available to abort the function before completion or to undo the function after completion; • Up Reversal: The up-event reverses any outcome of the preceding down-event; • Essential: Completing the function on the down-event is essential. **Note 1:** Functions that emulate a keyboard or numeric keypad key press are considered essential. **Note 2:** This requirement applies to web content that interprets pointer actions (i.e., this does not apply to actions that are required to operate the user agent or assistive technology). **(Level A)**	NA	Pass	Pass	Pass	Pass
Label in Name 2.5.3 For user interface components with labels that include text or images of text, the name contains the text that is presented visually. **Note:** A best practice is to have the text of the label at the start of the name. **(Level A)**	Fail	Pass	Pass	Fail	Pass
Motion Actuation 2.5.4 Functionality that can be operated by device motion or user motion can also be operated by user interface components and responding to the motion can be disabled to prevent accidental actuation, except when: • Supported Interface: The motion is used to operate functionality through an accessibility supported interface; • Essential: The motion is essential for the function and doing so would invalidate the activity. **(Level A)**	NA	NA	Pass	Pass	Pass

Principle 3: Understandable
Information and the operation of user interface must be understandable.

	Curtin University	Edith Cowan University	Murdoch University	Notre Dame University Australia	University of Western Australia
Language of Page: 3.1.1 The default human language of each Web page can be programmatically determined. **(Level A)**	Pass	Pass	Pass	Fail	Pass
Language of Parts: 3.1.2 The human language of each passage or phrase in the content can be programmatically determined except for proper names, technical terms, words of indeterminate language, and words or phrases that have become part of the vernacular of the immediately surrounding text. **(Level AA)**	Pass	Pass	Pass	Pass	Fail
On Focus: 3.2.1 When any component receives focus, it does not initiate a change of context. (**Level A**)	Pass	Pass	Pass	Pass	Pass
On Input: 3.2.2 Changing the setting of any user interface component does not automatically cause a change of context unless the user has been advised of the behaviour before using the component. (**Level A**)	Pass	Fail	Fail	Fail	Pass
Consistent Navigation: 3.2.3 Navigational mechanisms that are repeated on multiple Web pages within a set of Web pages occur in the same relative order each time they are repeated, unless a change is initiated by the user. (**Level AA**)	Pass	Pass	Pass	Pass	Pass
Consistent Identification: 3.2.4 Components that have the same functionality within a set of Web pages are identified consistently. (**Level AA**)	Pass	Pass	Pass	Pass	Fail
Error Identification: 3.3.1 If an input error is automatically detected, the item that is in error is identified and the error is described to the user in text. (**Level A**)	Pass	NA	Fail	Fail	Pass
Labels or Instructions: 3.3.2 Labels or instructions are provided when content requires user input.. (**Level A**)	Fail	Fail	Fail	Fail	Fail
Error Suggestion: 3.3.3 If an input error is automatically detected and suggestions for correction are known, then the suggestions are provided to the user, unless it would jeopardise the security or purpose of the content. (**Level AA**)	Pass	NA	Fail	Fail	Fail

Principle 3: Understandable
Information and the operation of user interface must be understandable.

	Curtin University	Edith Cowan University	Murdoch University	Notre Dame University Australia	University of Western Australia
Error Prevention (Legal, Financial, Data): 3.3.4 For Web pages that cause legal commitments or financial transactions for the user to occur, that modify or delete user-controllable data in data storage systems, or that submit user test responses, at least one of the following is true: 1. Reversible: Submissions are reversible. 2. Checked: Data entered by the user is checked for input errors and the user is provided an opportunity to correct them. 3. Confirmed: A mechanism is available for reviewing, confirming, and correcting information before finalizing the submission. (**Level AA**)	NA	NA	NA	NA	Fail

Principle 4: Robust
Content must be robust enough that it can be interpreted reliably by a wide variety of user agents, including assistive technologies.

	Curtin University	Edith Cowan University	Murdoch University	Notre Dame University Australia	University of Western Australia
Parsing: 4.1.1 In content implemented using mark-up languages, elements have complete start and end tags, elements are nested according to their specifications, elements do not contain duplicate attributes, and any IDs are unique, except where the specifications allow these features. **Note:** Start and end tags that are missing a critical character in their formation, such as a closing angle bracket or a mismatched attribute value quotation mark are not complete. (**Level A**)	Fail	Fail	Fail	Pass	Pass
Name, Role, Value: 4.1.2 For all user interface components (including but not limited to: form elements, links and components generated by scripts), the name and role can be programmatically determined; states, properties, and values that can be set by the user can be programmatically set; and notification of changes to these items is available to user agents, including assistive technologies. **Note:** This success criterion is primarily for Web authors who develop or script their own user interface components. For example, standard HTML controls already meet this success criterion when used according to specification. (**Level A**)	Fail	Pass	Fail	Fail	Fail
Status Messages 4.1.3 In content implemented using markup languages, status messages can be programmatically determined through role or properties such that they can be presented to the user by assistive technologies without receiving focus. (**Level AA**)	NA	Pass	Pass	Pass	Pass

Appendix B: Summaries of audits

An accessibility audit for five university websites were carried out by CFA Australia in November 2021. The section below outlines accessibility barriers that were identified during this process.

B.1 Edith Cowan University

The fourteen pages audited provided an overall score of 70% representing a partial view of ECU's web presence.

The rate of 70% compliance suggests that people with disability are likely to be able to access the majority of ECU content; however, our audit identified some significant issues that should be addressed as quickly as possible. These are:

1. Use of technologies that prevent the exposure of and description of images to accessible technologies, for example images inside of divs without image elements or other accessible alternatives.
2. Consideration of the purpose of the alt= attributes and their text and how they can be best used.
3. Diligence is required to ensure audio is accessible.

Current efforts by staff to implement accessible technique in the sample pages is noted. We recommend ongoing training of all staff who look after the website.

B.2 The University of Notre Dame Australia

The twenty-five pages audited call for several imporvements to the Notre Dame website:

1. Images are routinely not described so that people using assistive technologies cannot understand whether the image is important or not important, as it relates to other information on the page. Images may be marked as 'decorative,' which tells assistive technologies to skip past them, saving time and effort. Most images do not have any option actioned.
2. Webforms are often a portal to further information, and we found several forms on Notre Dame's website that may be unusable by people using assistive technologies.
3. Colour contrast is appreciated by all people. Notre Dame's website contains colour schemes that lack sufficient contrast. Referring to colour wheels that show complementary colours may assist with this.
4. The PDF campus map is insufficiently tagged, and therefore unhelpful to people with significant visual impairment.

We recommend ongoing training of all staff who look after the website to ensure that accessibility can be maintained.

B.3 The University of Western Australia

The fourteen pages audited provides an overall score of 67%, representing a partial view of UWA's web presence. We identified the following accessibility issues:

1. The inaccessible nature of webforms on the Future Students, Apply, Courses and Careers, School leavers, Postgraduate and International pages. Due to their significant importance to login or sign-up we recommend that the forms be edited with accessibility in mind.
2. Examples of good image descriptions can be seen in many uses across these pages. It is therefore surprising to find that significant hero images at the top of some pages have used technologies that do not support image description at all.

We We recommend ongoing training of all staff who look after the website to ensure that accessibility can be maintained.

B.4 Curtin University

Overall there is strong evidence that accessibility processes were considered during the design of this website, with alternative text for images being particularly successful. However, there are some issues that should be addressed as a matter of urgency. These are:

1. Keyboard accessibility, a lack of descriptive links, colour contrast, a lack of captions on video, and code not complying to validation requirements leading to assistive technologies potentially behaving erratically.
2. There are also issues related to some labels and forms.

Efforts by staff to implement accessible technique in the sample pages is noted. We recommend ongoing training of all staff who look after the website to ensure that accessibility can be maintained.

B.5 Murdoch University

The fourteen pages audited provides an overall score of 70%, representing a partial view of Murdoch Universities web presence.

Our findings suggest that accessibility has been considered in the development of the website; however, our audit identified some significant issues that should be addressed as quickly as possible. These are:

1. The colour palette includes frequent use of red against black. It is a too-low contrast pairing in many situations
2. The overly generous use on the same element of the title= attribute in conjunction with the alt= attribute and their often-matching content. This creates an unnecessarily verbose experience in some accessibility technology modes
3. Consideration of the purpose of the alt= attribute and its copy and how it can be best used.

Current efforts by staff to implement accessible technique in the sample pages is noted. For example, the Monsido accessibility service was connected to the sample pages. We recommend ongoing training of all staff who look after the website.