

An Accessibility Audit of the Barclays bPay Website

Jennifer Sparks

April 2018

Executive summary

This project describes an accessibility audit carried out on the Barclays bPay website (www.bpay.co.uk). The bPay products are especially useful for people with disabilities such as dyslexia, sight loss or dexterity problems. These users will need to be able to access the website and purchase the products.

The audit identified how accessible the website is for people with disabilities. It was carried out by an individual expert, no users were involved. The audit is summative as the website is already live and it used benchmarks to measure the accessibility. For the website to pass the audit it must meet WCAG (Website Content Accessibility Guidelines) Conformance Level A.

There are many ways to carry out an accessibility audit on a website. Software can be run on the website to identify problems, there are many types of accessibility checking software available. For this audit it was decided to run manual checks with some software tools to help discover any issues. There are some errors that software cannot identify such as whether the alt text is appropriate. Manual checking ensures that these types of problems can be identified and appropriate solutions suggested.

A purchasing user journey was chosen for the audit walkthrough. This enabled the main functionality of the site to be tested using an appropriate sample of pages.

To begin the project an 'easy checks' audit from the Web Accessibility Initiative (WAI) was carried out to identify any obvious problems. For each problem highlighted by the initial walkthrough a more in depth analysis was performed by referring to the WCAG 2.0 (Web Content Accessibility Guidelines).

The problems encountered were reported and the severity of the issues calculated. Each problem is listed under the guideline that it breaks. Changes to improve the website have also been suggested. The severity levels ranged from 1 to 3 with 3 being the most severe. The total number of errors encountered was 25. Two of the errors raised were level 3 and meant that the users could not access functionality required to complete the user journey with assistive technology.

The findings have been collated and reported in this document. Due to the large number and severity of the issues the bPay website does not conform to Level A of WCAG. To achieve this benchmark all of the redesign suggestions should be carried out.

Method

This audit was carried out in the last two weeks of March 2018 to establish whether the bPay website meets conformance level A of WCAG 2.0. (Web Content Accessibility Guidelines).

To reliably test the accessibility of a website a sample of pages is analysed. In this audit the pages were selected by carrying out a user journey. This provides a structured sample rather than a randomly selected sample. The recommendation for random sampling is to select 10% of the whole website. The bPay website contains just over 50 pages so the five pages selected for the user journey satisfies the proportion of pages required for a successful audit. In addition to this, the pages selected for the journey are commonly used and include essential functionality. Different types of pages have been selected, they also rely on various web technologies to support accessibility. The five pages being reviewed in the user journey are Homepage, Online Store, Sticker Page, Shopping Basket and Checkout. They provide information about how bPay works, it's benefits to the user and allows users to purchase the devices required for bPay to work. Although the product needs to be registered for it to work, the registration pages have not been included in this audit.

The user journey for this audit is 'The user accesses the bPay homepage and finds information about how bPay works and it's benefits for users. They watch the video that shows how it can be used. The user goes to the online store to look at the products. The user selects the Sticker and purchases it.' The audit has only been carried out on the desktop version of the website. The mobile and tablet versions and the mobile app have not been reviewed as they are considered outside the scope of this report.

To carry out this audit three main tools were used; the Web Developer extension, WAVE toolbar and NVDA screen reader. The first step was to run the WAVE toolbar on each page of the user journey. This identified problems with alt text, contrast and links, which were recorded for further investigation. This was followed by walking through the user journey and applying the Easy Checks from the Web Accessibility Initiative (WAI) to each page. Each of the ten Easy Checks involved a whole walkthrough of the user journey. The screen reader was on for all the auditing. The Web Developer extension was used to identify errors by turning off functionality such as displaying images and styles. By turning off the CSS it was easier to see where the tab action takes the user on the page. It was also useful to display the image alt texts. For each issue the location of the error and impact on the user was recorded. The severity of the error was also noted with the following scale:

1. minor irritation
2. affects user functionality
3. unable to perform the functionality for selected users

Once the problems had been identified from the Easy Checks they were then checked against the WCAG guidelines. Further investigation of the issues was carried out using the guidelines and recommendations were proposed.

Finally, all the remaining Level A guidelines were checked against the website to ensure that no issues were missed.

Findings

The following issues were identified following the accessibility audit of the bPay website. There are 25 problems listed under the WCAG guideline that they break. The severity of the error is recorded and the suggested solution is outlined.

The WCAG guidelines and situations are listed in Appendix A, please refer to this for full descriptions.

WCAG 1.1 – Text Alternatives (Easy Checks – Image text alternatives)

1.1.1 Non-text Content, Situation A

Recommendation: Use alt text that can be read by assistive technology. Keep descriptions short. Don't use jargon, product descriptions or irrelevant image names. Check all HTML code is correctly structured.

- **Home Page**

- Device images all have 'sash' instead of the image description as the alt text. The correct alt text is coded in the HTML against the image but it is being overridden by the alt text of the class, which has been set to 'sash'. (Fig. 1)
 - This makes the images indistinguishable from each other, the user will not know which device the image links to. (severity level 2)
- The two images that link through to Instagram have an alt text of 'bPay social' this does not describe where the link goes. (severity 1)
 - This is not enough detail, the user will not know the destination page.



Fig. 1 Alt text for Sticker image

- **Online Store**

- Alt text descriptions of the item images are bPay product descriptions and refer to the two year product life.
 - It is not clear what the product is (severity level 1)
- The colour selection icons are missing the alt text.
 - Users will not know that they can select a different option (severity level 2)

- **Sticker Page**

- The alt text for the different views of the product contain the image file name and not a description. (Fig. 2)
 - Users will not know what the image is from the description (severity level 1)



Fig 2. Alt text for Sticker image

1.1.1 Non-text Content, Situation F

Recommendation: Mark the non-text content so that it will be ignored by assistive technology.

- **Online Store**

- The 'bPay wearable devices' has alt text but is only decorative, there is no link.
 - This implies that there is a link when one doesn't exist and users may try to access it. (severity level 1)

- **Sticker**

- The alt text for the images in 'how does bPay work?' are correct descriptions but there is no link through to the pages on the keyboard only.
 - Keyboard users cannot link through to the items. (severity level 2)

WCAG 1.2 – Time Based Media (Easy Checks - Multimedia alternatives)

1.2.2 Captions (Prerecorded)

Recommendation: Provide open (always visible) or closed (optional) captions for the video.

- **Home Page**

- The second video is not captioned and has no option to turn captions on or off.
 - Users with a hearing impairment will not be able to access the important information in the video. (severity level 1)

1.2.3 Audio Description or Media Alternative (Prerecorded)

Recommendation: Provide audio descriptions of the video.

- **Home Page**

- The first video audio is music only but has no audio description option
 - Users with visual impairments will not be able to access the important information in the video. (severity level 1)

WCAG 2.1 – Keyboard Accessible (Easy Checks - Keyboard access and visual focus)

General Issues - The keyboard only access threw up numerous bugs that could not be replicated.

When a page is loaded the focus is on the field that was tabbed to, the last time the page was visited.

2.1.1 – Keyboard

Recommendation: Make all functionality available from a keyboard, using HTML form controls and links. Keep the focus of the tab visible on the screen.

- **Header Menu**

- The down arrow icons in the main menu cannot be tabbed to and are not visible to the screen reader (Fig 3).
 - Users cannot access the dropdown menus from the keyboard. (severity level 1)

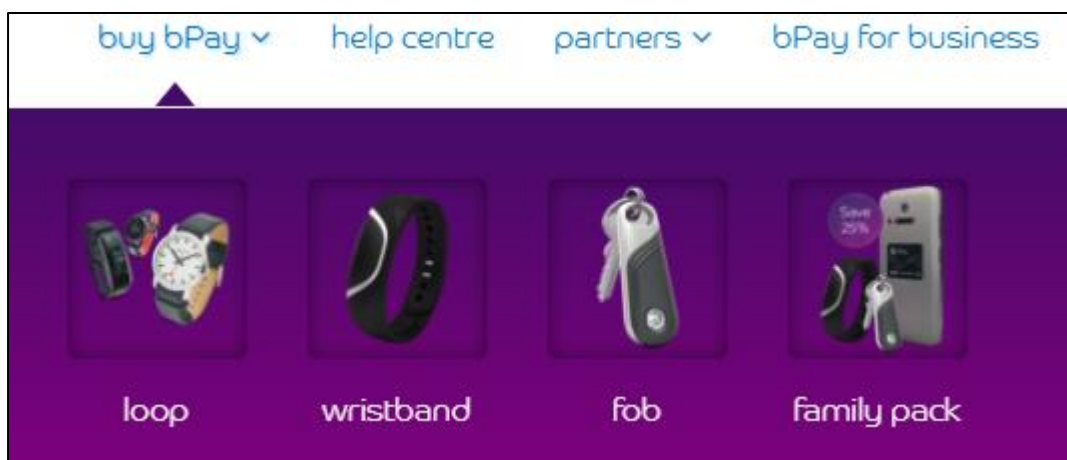


Fig. 3 Drop down not accessible by keyboard and not described by the screen reader

Home

- Using tab and the return button for all product images links to the T&Cs page, not the correct product pages. The mouse click links to the correct page. (severity level 3)
 - Users cannot access the correct page from the keyboard.
- The carousel (what do people say about bPay?) at the bottom of the page doesn't scroll when tab is used.
 - Users will not know what the screen reader is referring to as it is not visible. (severity level 1)
- **Online Store**
 - The images are skipped when the tab is used, the 'add to basket' and 'find out more' buttons do not specify which product they refer to.
 - User will not be able to identify which product to add to the basket or find out more about them. (severity level 2)
 - The colour selection icons are skipped by the tab.
 - Users will not be able to select a product option. (severity level 2)
- **Checkout**
 - Tab misses out the check boxes for 'use this as my card billing address' and the T&Cs. (Figs. 4 & 5)
 - Users will not be able to select these options (severity level 3)

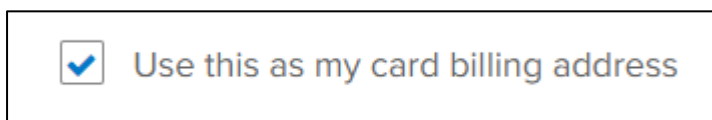


Fig. 4 Billing address checkbox

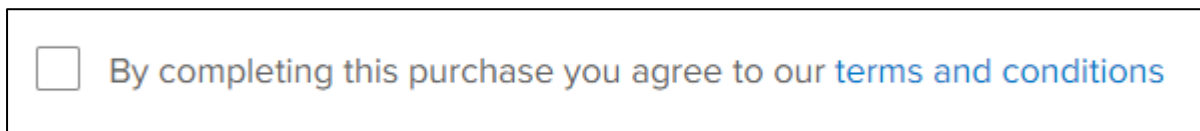


Fig. 5 Terms and Conditions Checkbox

2.1.2 – No Keyboard Trap

Recommendation: Ensure that users are not trapped in content. The user is advised of the method of moving focus away.

- **Header Menu**
 - The list items in the main menu cannot be accessed using the down arrow. The down arrow skips to the next menu item. Return displays the drop down menu but this option is not indicated by the screen reader. Tab scrolls through the list and then onto the next main menu item. The up arrow does not collapse the list. The menu dropdown does not conform to the standard usage of the keyboard.
 - Users will not be sure how to navigate through the main menu. (severity level 1)
- **Home**
 - In the 'how does bPay work?' section the tab cycles round the clickable links twice, it then changes the order of the images. After another cycle through it moves onto the next section. This doesn't happen when the screen is reduced in size and there is only one column. (Fig 6)
 - This is unnecessary repetition for the user and confusing. (severity level 1)

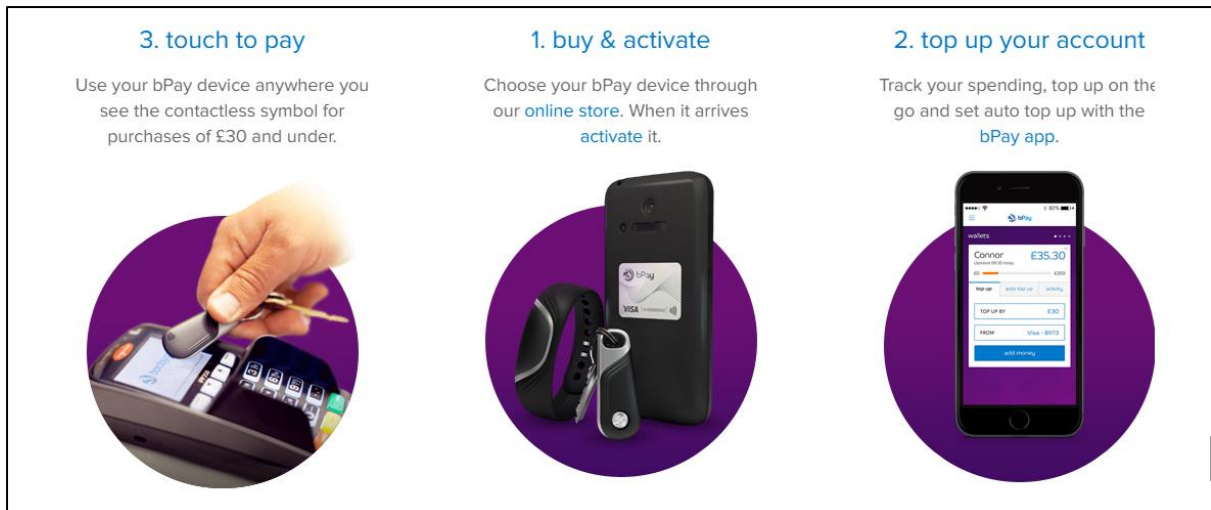


Fig. 6 Order of images changes with tab

WCAG 2.4 – Navigable

2.4.1 Bypass Blocks

Recommendation: Add a link to bypass blocks that are repeated on every page.

- **All Pages**

- With Keyboard only access the main menu must be tabbed through every time pages are accessed.
 - Users waste time tabbing through the main menu every time they visit the page. (severity level 1)

2.4.3 Focus Order

Recommendation: Place the elements in an order that follows sequence and relationships within the content.

- **Sticker Page**

- The tab order is confusing. Images first, then social media and scroll down links before quantity and add to basket button. There is no link on the main body of the page to go to the basket or the checkout.
 - Users waste time tabbing through the less important information and have to navigate back to the main menu for the shopping basket. (severity level 1)

2.4.4 Link Purpose (In Context)

Recommendation: Provide link text that describes the purpose of the link.

- **Header Menu**

- Shopping Basket is not identified by the screen reader when using tab or mouse over (Fig. 7).
 - Users do not know the link is for the shopping basket. (severity level 2)

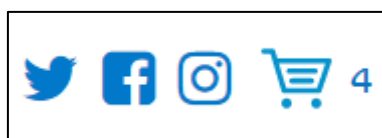


Fig. 7 Shopping basket in the header

- **Home**
 - Shop items are identified by the screen reader but the 'add to basket' and 'find out more' buttons do not identify which item they are assigned to.
 - Users will not be able to identify which product to add to the basket or find out more about. (severity level 2)
- **Your Basket**
 - The screen reader identifies the X icon to remove the item from the basket as a 'clickable button' but it does not tell you it will remove the item from the basket. When the mouse hovers over it there is no screen reader description either.
 - Users will not know how to delete items from the basket, it is not possible to reduce the quantity to zero. (severity level 2)
- **Checkout**
 - The item name and the colour are two separate fields, both link to the product.
 - Keyboard users hear duplicate buttons (severity level 1)

WCAG 3.3 – Input Assistance (Easy Checks - Forms, labels and errors)

3.3.2 Labels or Instructions

Recommendation: Provide descriptive labels

- **Basket**
 - The change the quantity input field does not have a label (Fig. 8)
 - It is not clear to the user what the input field is for. (severity level 1)
- **Checkout**
 - labels don't have associated 'for' in the HTML.
 - The checkboxes do not extend the clickable area to include the label. (Figs 4 & 5)
 - Users with reduced dexterity may have problems clicking on the small box. (severity level 1)

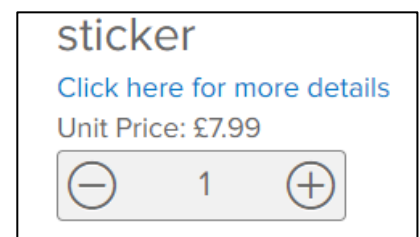


Fig. 8 No label for quantity

General Issues not covered by WCAG

The following issues are general accessibility issues that need to be addressed but are not covered by specific WCAG guidelines.

- Using WAVE identified that there appears to be a large amount of duplicate HTML that makes the screen reader output confusing. It also affects the keyboard only access, as the tab cycles through the same items more than once.
- The card expiry date screen reader is confusing, it doesn't read out the instructions underneath. It tries to read YYYY as a word.
- The main menu has an extra menu level which is why the screen reader says 'list with one item' followed by 'list with six items'.

Easy Checks Issues Higher than Level A Conformance

Several problems were identified through Easy Checks but could not be classified in the Level A conformance. They are identified in Appendix B.

Conclusions

Many WCAG guideline failures have been identified and therefore the bPay website is not WCAG Level A Conformant. This means that the site is not accessible to all members of the public. It is especially relevant for bPay as their products are useful for people with disabilities.

Overall 25 issues were identified in the user journey, the number of errors by their severity is:

Level 3 (most severe) 2

Level 2 8

Level 1 (least severe) 15

Most of the problems raised were related to the keyboard only functionality and alt text issues. The severity level 3 errors only affected users with keyboard only access;

- The products could not be accessed from the home page via the keyboard
- The checkboxes on the checkout page were not accessible via the keyboard

These two problems have been marked as the most severe error accessibility errors as the users cannot perform the functionality required with assistive technology. If other users could not perform this functionality then the issue would be a usability problem and not an accessibility problem.

The bPay website uses different web technologies to support accessibility. These include alt text, screen reader support and ARIA. However, there was a low level use of ARIA in the web pages. This may explain the number of failures found in this site. The tab action didn't seem to have been addressed at all, there was very little code indicating that the HTML attribute 'tabindex' had been used. In addition to this there were coding errors that caused more problems such as incorrect links.

Some problems that were found in the Easy Checks were above the level of conformance that this audit is checking. They have been excluded from the report but are identified in Appendix B.

The methods and tools used in this project have exposed many inadequacies in the bPay website. The process was very thorough and there is a high level of confidence that all the accessibility issues have been reported. If all of the recommendations are carried out, the bPay website will conform to WCAG Level A.

Evaluation of Accessibility Audit Tools and Methods

This section details aspects of an accessibility audit it is not to be read as part of the main report.

The WAVE and NVDA screen reader significantly affected the performance of the browser. This meant that the audit took longer than expected. There was an assumption that the level of detail in the Easy Checks was only WCAG Level A conformance. However, this was not the case and many failures were recorded at this stage which were outside the scope of this report, i.e. level AA or AAA.

When using the keyboard only, the element in focus is not obviously highlighted. The menu items changed to bold but this is very difficult to see. This is a Level AA failure of WCAG-EM 2.4.7 Focus Visible. This is a major problem and I think should be included in the Level A checks. Even with the screen reader turned on it is difficult to navigate without the focus highlighted.

Some issues could not be categorised by the guidelines, these were usually general problems. This included the duplicate HTML code and

Appendix A Descriptions of Relevant WCAG Guidelines

1.1 – Text Alternatives

Provide text alternatives for any non-text content so that it can be changed into other forms people need, such as large print, braille, speech, symbols or simpler language.

1.1.1 – Non-Text Content

All non-text content that is presented to the user has a text alternative that serves the equivalent purpose.

- Situation A: If a short description can serve the same purpose and present the same information as the non-text content.
- Situation F: If the non-text content should be ignored by assistive technology

1.2 – Time-based Media

Provide alternatives for time-based media.

1.2.2 Captions (Prerecorded)

Captions are provided for all prerecorded audio content in synchronized media, except when the media is a media alternative for text and is clearly labeled as such.

1.2.3 Audio Description or Media Alternative (Prerecorded)

An alternative for time-based media or audio description of the prerecorded video content is provided for synchronized media, except when the media is a media alternative for text and is clearly labeled as such.

2.1 – Keyboard Accessible

Make all functionality available from a keyboard.

2.1.1 Keyboard

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.

2.1.2 No Keyboard Trap

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.

2.4 Navigable

Provide ways to help users navigate, find content, and determine where they are.

2.4.1 Bypass Blocks

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

2.4.3 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.

2.4.4 Link Purpose (In Context)

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.

3.3 – Input Assistance

Help users avoid and correct mistakes.

3.3.2 Labels or Instructions

Labels or instructions are provided when content requires user input.

Appendix B Errors outside the Scope of this Report

These errors were identified in the Easy Checks walkthrough, they do not conform to WCAG Level A. The issues are either level AA or AAA.

Headings

Headings are important for users of Assistive Technology, they highlight grouping and inform the user when a new section has been entered.

Home

There are missing heading levels (h3 and h4) in the product carousel. Level 5 is used for product description headings.

Online Store

Missing headings h2, h3 and h4

Sticker Page

Missing headings h2, h3 and h4

There is no header for the more information section.

Footer

There is no heading for the footer area so the user will not know they have entered this area.

Moving, flashing or blinking content

The fast moving video on the home page can be very distracting for some disabled users. There is a pause button but this is not accessible via the tab and is not that obvious as it is grey.

Contrast Ratio

The white on purple is a good contrast for partially sighted users but could prove problematic for dyslexic users.

WAVE identified contrast errors on the menu in the footer, where there is blue text on the light blue background. Also identified was the green text on white on the Sticker page, 'In stock and ready for delivery'.

There is no facility to change the text or background colours. The breadcrumbs menu is also reported as low contrast.

Resize Text

There is no facility to change the text size for the website. If the default text size is changed, in the browser settings, the font on the bPay website is not affected. However, the zoom can be changed in the browser settings. If the zoom is changed to a very high level the header obscures half of the page.