Website Accessibility Report

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Introduction

The Institute for Human Centered Design (IHCD) conducted a review of the Barnstable website (https://town.barnstable.ma.us/index.asp). This review consisted of an internal assessment by deep content experts, which focused on applicable portions of the World Wide Web/Web Accessibility Initiative (W3C-WAI) Web Content Accessibility Guidelines (WCAG 2.1).

Overview

IHCD reviewed the Town of Barnstable's website with assistive technologies (AT) including screen readers, screen magnifiers and keyboard-only navigation across operating systems: JAWS with Chrome and NVDA with Firefox on a Windows PC and VoiceOver with Chrome and Safari on MacOS. While some important accessibility features are in place, there are also elements and functionality that present barriers for accessibility to a wide range of users that require remediation to ensure a usable website experience.

The major barriers on the Barnstable website relate to navigation and semantic structure. The website currently lacks a skip link to allow people using a screen reader to bypass redundant information to reach the new and relevant information on a page. As sighted users scroll past redundant navigation information such as main menus to access main page content, users navigating with screen readers should have an equivalent method such as a "Skip to Main Content" link that is either persistent on the page, or is set with tabindex="-1" so that it is the first thing they encounter when the begin navigating with the page. Issues with semantic structure such as skipped heading levels, incorrect use of heading tags to stylize content, and missing ARIA attributes and states to make elements such as dropdown menus accessible for assistive technology users also cause significant barriers to equitable use of the website.

The accurate application of heading levels is crucial for users navigating with assistive technology to access content easily and independently, and to understand the context and hierarchy of the content presented. Headings that do not match the semantic structure present barriers to access for all users and especially, screen reader users. For example: on the website home page, the main header doesn't have an <h1> tag; the Quick Links heading has an <h2> and all subsequent section headers have an <h5> instead of an <h3>. Heading levels should never be skipped or used as a means to reflect changes in text sizes and style content.

The main menu is an important tool to aid navigation. For people using assistive technology to navigate, it is important that the menu be identified correctly and programmed to convey the accurate number of menu items, which items, if any, have submenus, and the state of each of those items as they are navigated. The menu and menu items in this case are missing HTML role attributes to correctly identify them to screen readers. They are also missing ARIA attributes (such as aria-haspoup and aria-expanded) to convey to users that some menu items have dropdown submenus with additional content. Although the same content is provided when the link for the menu item is selected, that requires users navigating with assistive technology to go through multiple pages to find information that is easily accessible to non-AT users who can hover, click, or scroll through content on the home page. An equitable experience would be to ensure that all users have access to the main menu content on the home page, and that they have the option to skip past it if they choose to by providing accurate roles, tags and a skip link.

Users rely highly on the 'Search' functionality when information cannot be found with ease through the main navigation menu. The Barnstable

website uses an search feature that is enhanced by Google to provide results directly through the search engine rather than internally through the website. While that does not cause any barriers in itself, when a search is submitted, the results load on a pop-up window which is not recognized correctly by screen readers, thus excluding groups of users from accessing the results of the search function. IHCD recommends providing an internal search feature as many users expect a straightforward method to search for information within a website.

The Calendar is also a widely used function of a municipality website that many people look to for information on events, meetings, and so on. Issues with the calendar's inaccessibility affect many groups of users including but not limited to people who are blind or have low vision, and people who are non-native technology users. The calendar includes: text that is difficult to read as it does not meet the minimum requirements for color contrast, link text that does not convey purpose to people who use screen reader shortcuts, and pop-up windows when an event is selected which are inaccessible to screen reader users. The combo boxes to select other months and years also present barriers as they do not function in the way they are expected to, adding a layer of complexity to accessing the calendar.

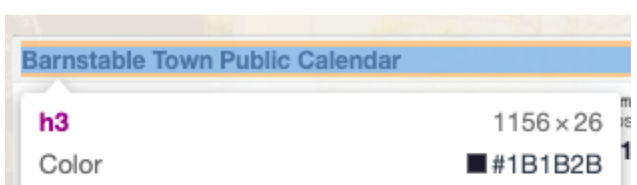
All images must have alternative text to convey what is depicted in the image to screen reader users. Providing concise and accurate alternative text is essential to making images accessible to users with visual or certain brain-based disabilities. Similarly, all videos must have closed captioning and audio description as applicable to ensure that they are accessible.

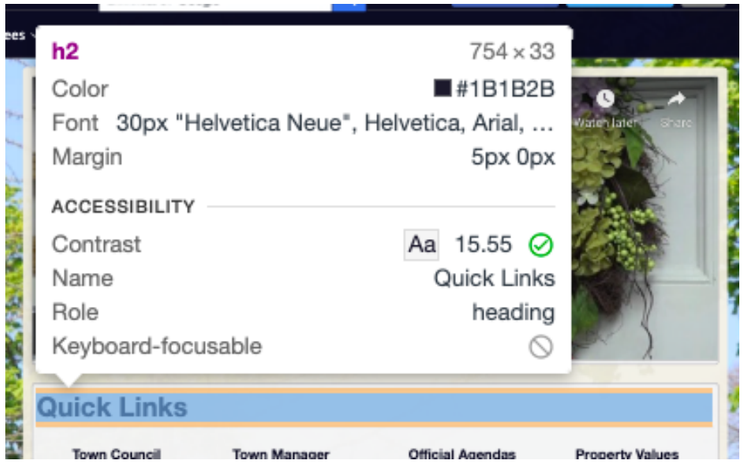
All document downloads including agendas, minutes of meetings, flyers, forms, and informational documents, must be accessible for all. Considerations include ensuring accessibility with assistive technology, use of plain language to convey information, and a simple layout with a clear hierarchy of information. Color contrast, font size and type, and avoiding overprinting text on image backgrounds should also be carefully considered. Wherever possible, ensure that forms are interactive and fillable on the website rather than requiring a document download. If a download is necessary, ensure that the form is accessible.

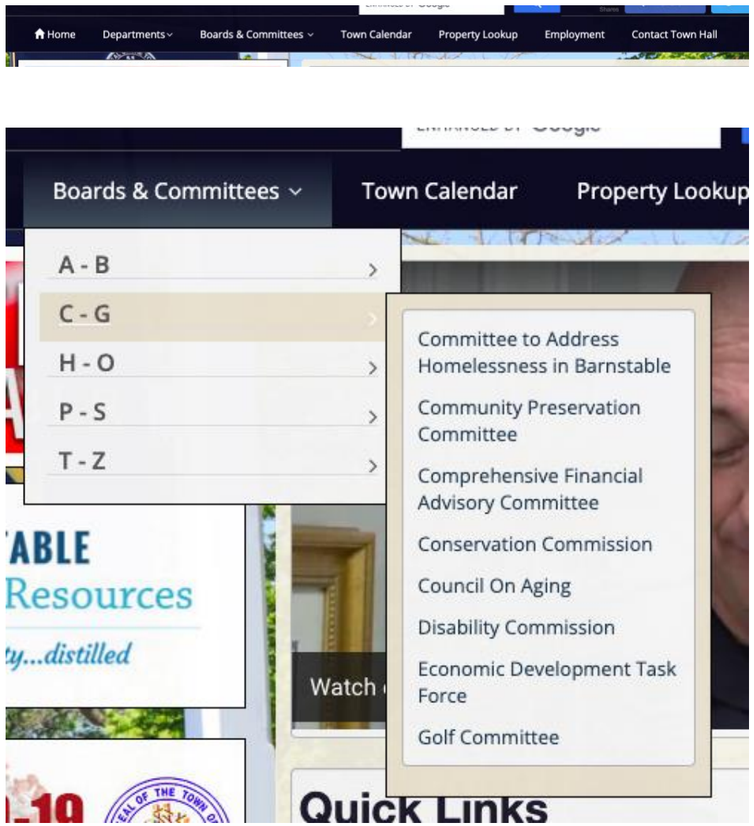
As new content is uploaded on the website, ensure that accessibility standards are met and maintained. Adding new pages or updating content is often when websites fall out of compliance following remediation as, for example, alt text can be left out or insufficient, inaccessible videos are uploaded, or inaccessible documents and links are uploaded.

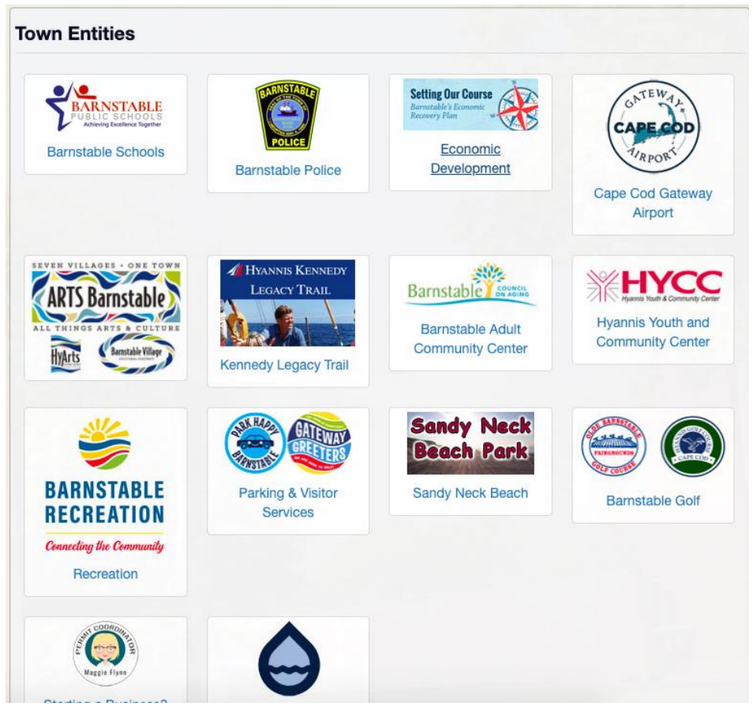
These major issues, in concert with those that follow in the catalog, present many barriers to accessibility, usability and a positive user experience. To address some of the major issues, the CSS and JavaScript theming will need to be redesigned to address all occurrences of the issues presented in the catalog. In many cases, issues are recurring throughout the website but only a limited number of examples are documented in the report.

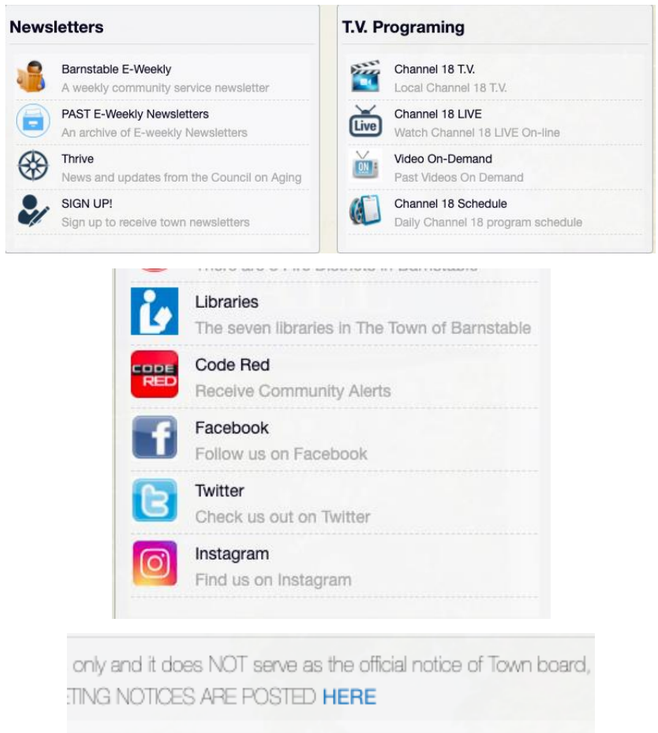
All third-party widgets, portals and websites that town.barnstable.ma.us relies on and directs users to also need to comply with WCAG 2.1 AA. All third-party software should be properly vetted for compliance, and future RFPs and contracts should ensure that finished products are accessible and inclusively designed by specifying appropriate accessibility guidelines and conducting web accessibility reviews, with special consideration given to involving real users with a wide range of functional limitations at multiple stages throughout design and development. Web authoring staff should undergo training covering best practices for posting accessible web content and creating accessible documents.

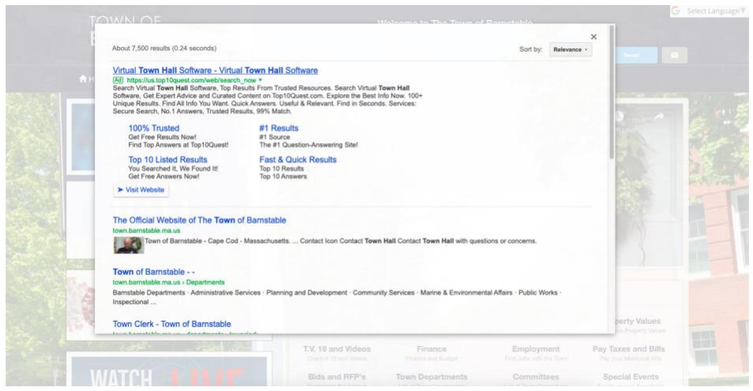
	Images	Section	Issue	Description	Tags
1		Main Navigation	Lack of 'Skip to Main Content' Link	**Background** Screen reader dependent users rely on skip links to jump past redundant navigation content. Skip links must anchor to the main content on each page. Having a skip to main content feature is important for many user groups including blind and Low-Vision users who rely on screen readers, but also users with dexterity impairments who rely on the use of keyboards to navigate web content who may experience pain due to repetitive keystrokes on every web page. **Current** There is no skip link, forcing users to navigate through repetitive navigation menus on all web pages. This quickly leads to frustration among users who are looking to access the main or new content on each web page without being forced through familiar and repetitive content multiple times. **Recommendation** Ensure that a 'Skip to Main Content' link is provided on all pages on the website. The link typically appears on the top left corner of the page and should have a programmatically focusable target with tabindex="-1".	Blind, Low-Vision, Dexterity Impairment WCAG 2.1 AA 2.4.1 Bypass Blocks
2		General Content	Skipped and Incorrect Heading Levels	**Background** Consistent and clear headings provide document structure and make content easier to consume. They also facilitate keyboard navigation for assistive technology users as screen readers have short keys that allow the users to navigate using different heading levels. Headings that are not clear and	Blind, Low Vision, Dexterity Impairment WCAG 2.1 AA

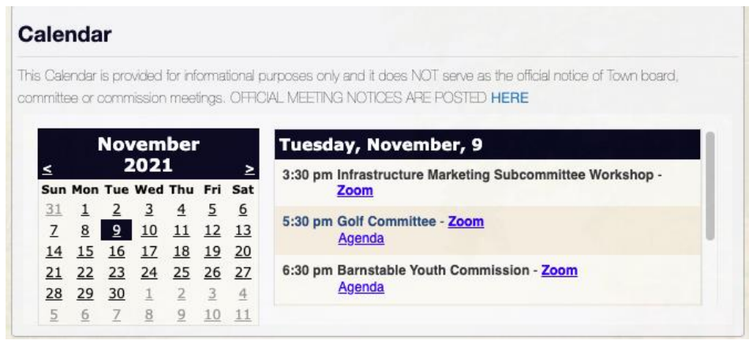
Images	Section	Issue	Description	Tags
 			descriptive of the content they are representing presents all users and especially, non-visual screen reader users confusing experiences. **Current** Across the site the heading levels have been skipped, have inaccurate tags and titles. For example, there is no <h1> on most webpages. Subsequent section headers do not follow the hierarchy: on the home page, Quick Links is given an <h2> but other section headers have <h5>, skipping heading levels 3 and 4. On other webpages, page headers are given <h3> tags, without using the prior heading levels. Heading levels tags are being used to stylize content. **Recommendation** Headings are utilized for site navigation, so heading level tags should be reserved for organizing main content. There should generally only be one heading level 1 on each page, and heading levels should be structured in sequential order with no skipped heading ranks (unless closing a subsection, for instance). Ensure that headings that are contained within other h-tags follow an accurate header hierarchy. Ensure that headings are not being used just to format the style of text. Heading tags should be kept independent of other lines of, as it makes it nonfunctional for users navigating with headings and does not follow best practices for clean coding. Heading names should be descriptive and unique (i.e.no repetition of heading names on the same page). For reference: https://www.w3.org/WAI/tutorials/pagestructure/headings/	2.4.6 Headings and Labels

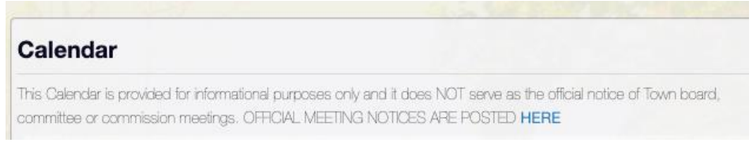
	Images	Section	Issue	Description	Tags
3		Menu Bar	Inaccessible Main Menu	**Background** For all user interface components, notification of changes in states must be available to user agents including assistive technologies. This is especially important for the users who are blind or have low vision who rely on screen readers to navigate web content. For example, when expandable menus collapse or expand, there should be a notification available for all sensory modalities. All functionality of the website must be operable through a keyboard interface. **Current** The submenus in the main menu bar can only be accessed by hovering with a mouse/trackpad. They are inaccessible when navigating with keyboard-only navigation and with screen readers. The main menu items are missing HTML role attributes to identify them and ARIA attributes to convey their state. **Recommendation** The menu items' roles must be programmatically defined and notify screen reader users that they can be expanded to access a list of elements**.** Appropriate ARIA attributes and states can be used to give users the information they need about the clickable elements and all the content associated with them. Menu items need aria-haspopup and aria-expanded attributes to ensure all users can access menu content independently.	Low -Vision, Blind WCAG 2.1 AA 2.4.4 Link Purpose (In Context)

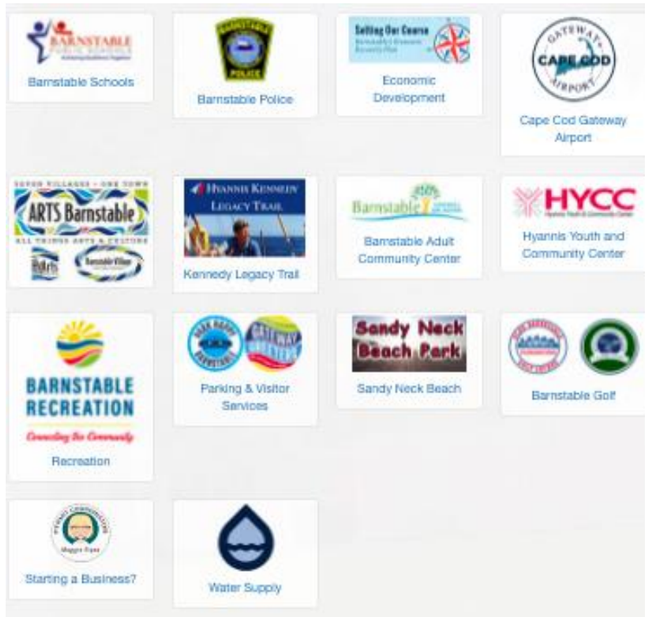
	Images	Section	Issue	Description	Tags
4		General Content	External Link	**Background** When activating a link, it leads to changes in context, changes that are made must be predictable to users. Changes in context can confuse users who do not easily perceive the change or are easily distracted by changes including users with low vision or users with some brain-based functional limitations. **Current** Most or all of the links under the Quick Links section open in a new tab without informing the user and some lead to external/third-party websites. This makes it difficult for people who are blind or have low vision to know which webpage they are on. It also causes barriers for non-native technology users who may expect the links to open in the same window/tab, or notify them otherwise. **Recommendation** It is best practice to not have links open in a new window without informing the user as this can cause confusion for screen reader users especially when they are unaware of the change. Where this cannot be avoided ensure that users are informed prior to opening the new window. For example, having a discernable aria label will read ‘Pay Fees link opens in new window’ rather than just opening in a new window without prior notification. **Design Notes:** Consider using common icons for external links: 	Blind, Low-Vision, Brain-Based Functional Limitations WCAG 2.1 AA 3.2.1 On focus

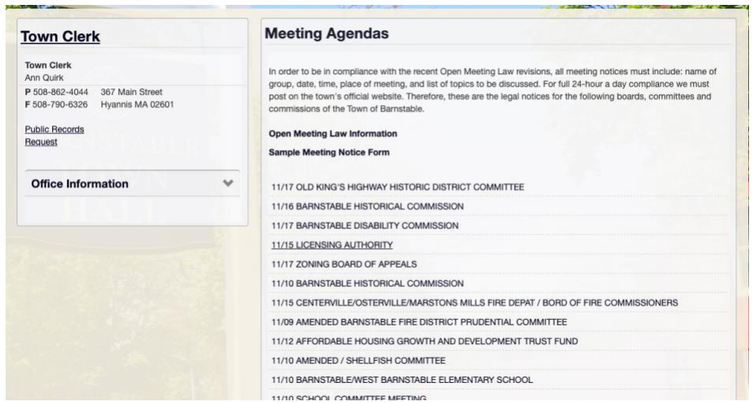
	Images	Section	Issue	Description	Tags
				Engineering Notes: Ensure all external links or icons are properly labeled to give context to screen reader users: <i class="external-link" aria-label="External Link" />	
5		General Content	Insufficient Color Contrast	**Background** All text elements and images of text must have sufficient contrast between text in the foreground and background colors. Text that is too close in luminance (brightness) to the background can be hard to read for user with low vision. **Current** The use of grey text on a grey background makes readability very difficult and fails the minimum requirements for color contrast. The current color contrast for the grey text on the grey background is 3.6:1. **Recommendation** Ensure all text elements have at least 4.5:1 contrast for regular text and 3:1 for large text. IHCD recommends the Paciello Group's Color Contrast Analyzer and similar tools: https://developer.paciellogroup.com/resources/contrastanalyser/	Low-Vision, Brain-Based Functional Limitations, 65+ WCAG 2.1 AA 1.4.3 Contrast Minimum

	Images	Section	Issue	Description	Tags
6		Search	Inaccessible Search Function	**Background** There must be more than one way available to locate a webpage to make it possible for users to locate content in a manner that best meets their needs. Some users may find one technique easier or more comprehensible than others. Search tool lets users locate content, without needing to understand or navigate through the structure of the website. This can be a quicker or easier way to find content, particularly on large sites. For example, users with visual impairments sometimes find it easier to navigate to the correct part of the site by using the search function, rather than scrolling through a large navigation bar using a screen magnifier or screen reader. **Current** The search feature is enhanced by Google to provide results directly through the search engine rather than internally through the website. While that does not cause any barriers in itself, when a search is submitted, the results load on a pop-up window which is not recognized correctly by screen readers, thus excluding groups of users from accessing the results of the search function. **Recommendation** If the functionality of the search feature cannot be changed, ensure that the pop-up window is recognized by assistive technologies to ensure the search results are accessible to all. IHCD recommends a search function more ubiquitous with what users expect — an internal search within the website, with search results loading on a webpage within the site.	Blind, Low-Vision WCAG 2.1 AA 2.4.4 Link Purpose (In Context)

	Images	Section	Issue	Description	Tags
7	 	Calendar	Inaccessible Calendar	**Background** The name and role of an element must be programmatically determined to let screen reader users define the element and know how to interact with it. For all user interface components, notification of changes in states must be available to user agents including assistive technologies. This is especially important for the users who are blind or have low vision who use screen readers to navigate web content. For example, when expandable menus collapse or expand, there should be a notification available for all sensory modalities. **Current** On the Calendar page, the combo boxes that are provided to select the month and year are inaccessible to keyboard and screen reader users. Instead of expanding the dropdown with choices, pressing the down arrow key reloads the page with the calendar for the next month. This interaction means that users looking to skip ahead multiple months, or for a specific year have no expected and straightforward means to do that. On the home page, the dates in the calendar are read just as dates: “Link, 1,” “Link, 2” and so on rather than “Monday, 1st,” “Tuesday, 2nd,” etc. **Recommendation** Ensure that the data cells in the calendar widget are identified accurately with the context required to understand them and all the content being presented. Aria-label/aria-labelledby is one technique that can be used here. The combo boxes also require remediation to ensure that users navigating with assistive technology can use them to make their selections.	Blind, Low-Vision WCAG 2.1 AA 1.3.2 Meaningful Sequence

	Images	Section	Issue	Description	Tags
8	 	General Content	Insufficient Link Text	**Background** Users navigating a web page with a screen reader rely on descriptive link text to understand the purpose and function of a link. Many screen reader users use a shortcut to display a list of links to navigate a website efficiently. When link titles are unspecific, users cannot identify which link to select to find the information they are searching for, often leading to confusion and a frustrating user experience. **Current** The website on numerous pages has links which are labelled as ‘read more, here or see more details’ to name a few. When a user pulls up a link list as shown in the image, having insufficient descriptions makes it near impossible to distinguish the purpose of linked labelled identically with different webpages. **Recommendation** Hyperlinking a longer, more descriptive phrase such as “Official meeting notes” rather than “Here” or “Click here” is recommended. People navigating with screen readers may use a shortcut to access a list of links or headings as a means to navigate more easily through the website. Hearing links such as “here” or “Zoom” or “Click here” out of context don’t facilitate ease of navigation. **Resources** https://www.w3.org/WAI/WCAG21/Understanding/link-purpose-in-context.html#techniques https://webaim.org/techniques/hypertext/link_text	Blind, Low-Vision WCAG 2.1 AA 2.4.4 Link Purpose (In Context)

	Images	Section	Issue	Description	Tags
9		General Content	Lack of Adequate Alternative Text and Image Descriptions	**Background** All images must have alternative text to convey their purpose and meaning to screen reader users. Providing concise and accurate alternative text is essential to making images accessible to users with visual or certain brain-based disabilities. **Current** Images under the Quick Links section have alt text such as “Barnstable Airport” or “Barnstable.” These images are redundant in their context and do not convey any content to users. Many images on the home page apply a similar format to the alt text. **Recommendation** Ensure that every <img> element has alternative text. The alternative text must be a description of the image shown and not the title, or be null alt text (alt=” ”). Decorative images should have null alt text to signify to screen reader users that they are not missing important contextual information. All the images under the Quick Links section, for example, should be considered decorative visual elements and be given null alt text. **Resources** https://webaim.org/techniques/alttext/ https://www.w3.org/TR/UNDERSTANDING-WCAG20/text-equiv.html	Low-Vision, Blind WCAG 2.1 AA 1.1.1 Non-Text Content
10		Documents	Inaccessible Documents	**Background** Downloadable resources must be made accessible. If only one format of the file is	

Images	Section	Issue	Description	Tags
 			made available, it must be accessible. Accessible alternatives should be made available for any inaccessible documents shared on the website. This is especially crucial for forms and documents that serve as the only or primary way for residents to obtain information about the Town and to take necessary action. **Current** Many PDFs on the website, such as meeting minutes, agendas, and forms, are inaccessible to screen reader users and users with low vision. **Recommendation** PDFs and other resource documents should be made accessible. This includes following WCAG guidelines for color contrast, image labels, and most importantly using rich text as opposed to images of text. Provide alternative way to access documents and forms that are not yet accessible, such as providing plain text versions of PDFs that have not yet been made following PDF accessibility techniques. **Design Notes/Resources** PDF accessibility techniques: https://www.w3.org/TR/WCAG-TECHS/pdf.html Adobe's Accessibility Training: https://www.adobe.com/accessibility/products/acrobat/training.html	