

FOREWARD

The online presence of individuals and organisations around the world has become a new norm in this digital age. In order to disseminate government information and to provide government services effectively, government agencies must leverage on the “always connected” citizens of today.

Bhutan started e-Government initiatives even before the formulation of the Bhutan ICT Policy and Strategies (BIPS) in 2004. BIPS mandated government agencies to digitise government information to make it more accessible to citizens. Websites were used as a channel for dissemination of such information for the general public. Even today, websites are still one of the primary channels for efficient delivery of online services. With initiatives such as G2C, delivering numerous public services online, and significant increase in mobile devices used to access online content, the use of the World Wide Web by Bhutanese has increased manifolds.

Bhutanese citizens have been exposed to IT services available on the internet and the government has been trying to provide services at par to meet their increasing demands. To cater to these emerging challenges, the government developed the Bhutan e-Government Master Plan 2013. The master plan necessitates universal online access to public services and information to diverse users across the country. It identified the electronic Government Interoperability Framework (e-GIF) to facilitate efficient delivery of services through adoption of technical standards in government agencies. To help achieve this, standards across various domains are required, including the adoption of a Government Website Standard.

The Government Website Standard is aimed at facilitating all government agencies to focus on delivering information that are aligned to the needs of the citizen. It is also aimed to provide familiarity and consistency for citizens while accessing websites across the agencies of Royal Government of Bhutan (RGoB) by setting uniform standards. This standard has been developed in consultation with various stakeholders across ministries & autonomous agencies, districts, *Thromdes* and regional offices. I thank all the stakeholders in providing constructive feedbacks during the development of this standard. I am hopeful that this standard will help citizens better navigate the complex web of government bureaucracy making government services much more accessible to our citizens.

Trashhi Delek!

(D.N. Dhungyel)

MINISTER

ACKNOWLEDGEMENT

For implementation of any project or plan, stakeholder consultation and participation are some of the crucial facets we cannot afford to disregard. Taking this into account, during the development of the government website standard, the team consulted diverse stakeholders and reviewed the documents by the officials from the relevant agencies in an inclusive manner. Following are some of the details of the consultation and review meetings:

- 1) Bilateral meeting for interviewing/reviewing/information gathering with key stakeholders were held between April 2017 to June 2017.
- 2) Conducted 1st review meeting on 21/07/2017 with 26 ICT officials to advocate about the initiatives, its objectives, and discussed the first draft to collect their feedbacks/suggestions/views. The first draft was shared to ICT officials in the regions via email.
- 3) Conducted 2nd review meeting on 28/10/2017 with 19 ICT officials to discuss the updates incorporated from the first review, validate further on the standards and provide further comments.
- 4) The final draft was shared with the stakeholders informing about the changes and updates.

The participants and officials in the regions provided constructive feedbacks and suggestions. The ministry would like to thank the Core Team members from DITT, all the reviewers and stakeholders for providing invaluable feedbacks. The list of participants, stakeholder agencies and core team members are provided in the table below.

GOVERNMENT WEBSITE STANDARDS CORE TEAM

Sl. No	Name	Designation,	Agency
1	Jigme Thinlye Namgyal	Director General	DITT, MoIC
2	Jigme Tenzing	Chief ICT Officer	DITT, MoIC
3	Tshewang Chojay	Sr. ICT Officer	DITT, MoIC
4	Darshan Thapa	ICT Officer	DITT, MoIC

STAKEHOLDER AGENCIES

Sl.	Name	Designation/Role	Agency
1	Sonam Tashi	Manager	Bhutan Telecom Limited
2	Bibeak Tirwa	Web Developer	Yangkhor IT Solutions
3	Tashi Daw	Chief Technology Officer	New Edge Technologies
4	Jigme Singay	Focal, Dzongkhag Websites	DITT, MoIC

LIST OF REVIEWERS

Please find the list of reviewers in *Appendix II* of the document.

Table of Contents

1. Background	9
2. Scope	10
3. Objective	11
4. Intended Audience	12
5. Website Management Framework	13
5.1. Website Management Process Flow	13
5.2. Website Management Process Description	14
5.3. Website Development Process	16
5.3.1. Initial Planning	17
5.3.2. Website Audience	17
5.3.3. Define Content	19
5.3.4. Content Grouping and Labeling	19
5.3.5. Information Architecture Development	20
5.3.6. Simplified Webpage Layout	20
5.3.7. Content Writing	21
5.3.8. Draft Website	21
5.3.9. Development	22
5.3.10. Testing	22
5.3.11. Hosting	23
5.3.12. Maintenance	23
6. Government of Bhutan Identifiers	24
6.1. Bhutan Government Identity	24
6.2. Government Domains	24
6.3. Procedure for Registering a Domain	25
6.4. Guidelines for Domain Name Change	26
6.5. Domain Dispute Resolution Procedure	26

7.	<i>Government Information Online</i>	26
7.1.	Minimum Content for all Government Websites	27
7.1.1.	Required content	27
7.1.2.	Recommended Content	27
7.2.	Common Page Elements	28
7.3.	Information Request and Feedback	28
7.4.	Legislative and Sector Information	29
7.5.	Electronic Forms	29
7.6.	Information not permitted on Government Website	29
8.	<i>Technical Standard</i>	30
8.1.	Supported Browsers and Devices	30
8.2.	Analytics	30
8.3.	Referenced Web Technology Specifications	31
8.3.1.	Validation	31
8.4.	HTML	31
8.5.	CSS	32
8.6.	Accessibility	32
8.7.	Mobile	33
8.8.	Files	34
8.8.1.	Naming Conventions	34
8.8.2.	File Structure	35
8.8.3.	File Size Optimization	35
8.9.	Clean URLs	35
8.10.	Server Environment	35
8.11.	Desktop Development Environment	36
9.	<i>Structural Standards</i>	36

9.1.	Layout and Design	36
9.2.	Website Hierarchy and Structure	36
9.3.	Page Layout	36
9.4.	Navigation	41
9.5.	Sitemap	41
9.6.	Images and Graphics	42
9.6.1.	Graphics, Buttons and Icons	42
9.6.2.	Graphic Format and Optimization	42
9.6.3.	Copyrighted Images	42
9.6.4.	Alternative Text or Description	43
9.6.5.	Graphical Text	43
9.6.6.	Infographics	43
9.7.	Language and Text	43
9.7.1.	Page Title	43
9.7.2.	Content Language	43
9.7.3.	Headings	43
9.7.4.	Clear Text	44
9.7.5.	Typography	44
9.7.6.	Text on Images	44
9.8.	Hyperlinks	44
9.8.1.	Link Appearance	44
9.8.2.	Descriptive Link Text	44
9.8.3.	Link Open Option	45
9.8.4.	Links to Document or Application Files	45
9.9.	Forms	45
9.9.1.	Labels and Fieldsets	45

9.9.2.	Errors	45
9.9.3.	CAPTCHA	46
9.10.	Tables	46
9.11.	Colours and Backgrounds	46
9.12.	Site Search	46
10.	<i>Website Design and Content Management</i>	47
11.	<i>Web Content</i>	48
11.1.	Information Architecture	48
11.2.	Content Characteristics	49
11.3.	Web Content Development	49
11.4.	Management of Web Content	50
12.	<i>Website Management</i>	51
13.	<i>Website Management Committee</i>	51
14.	<i>Government Web Management Team</i>	53
15.	<i>Website Management Strategy</i>	54
16.	<i>The Webmaster</i>	54
17.	<i>Visitor Feedback</i>	55
18.	<i>Documentation</i>	55
19.	<i>Decommissioning Website</i>	56
20.	<i>Archival Management</i>	56
21.	<i>Website Monitoring</i>	57
22.	<i>Backup Management</i>	57
23.	<i>Privacy</i>	58
24.	<i>Content Copyright</i>	61
25.	<i>Terms and Conditions</i>	61
26.	<i>Hosting</i>	63
27.	<i>Web Server Security</i>	64
28.	<i>Web Content Security</i>	64

29. Network Security	65
30. Content Management System Security	65
31. Content Hyperlinking	66
32. Metadata	66
33. Contingency Management	67
Appendix I – Compliance Check List	68
Appendix II – List of Reviewers	85

I. BACKGROUND

As more and more information and services move online, it is important to maximize the benefits that the web offers both providers and consumers. A website that is usable to everyone, including people with disabilities, has greater reach, allowing more people to interact with government as and when they want from anywhere using any device. At the same time, this helps to minimize the business cost associated with providing the same information and services through more traditional channels.

Royal Government of Bhutan recognizes the importance of **electronic governance**. Huge emphasis is laid on use of ICT in government service delivery. As of now there are more than 120 government websites in Bhutan. Assessment of existing government websites reveals that majority of the government agencies already have web presence. Websites are increasingly becoming mainstream channel through which agencies deliver information and services to citizens and business. Government websites should project a unified, positive image of the Government of Bhutan locally, nationally and globally.

However, it is found that the government websites follow different technology standards, design layouts, navigation architecture. In simple terms, it means different look and feel as well as functionality. The existing websites are generally agency centric, inconsistent and fragmented. This invariably requires common citizen to familiarize himself / herself with functionality of individual agency website which results in a lot of inconvenience, thus defeating the very purpose of these initiatives.

In order to introduce consistency, the way government agency websites are created, managed and decommissioned, it is essential that government agencies develop websites in compliance with standards that is based on the internationally recognized guidelines. The standard set requirement for the design, development, and content of Government websites to help make them easier for the public use. The standard should comprise of web management framework along with technical, structural, content management, and security guidelines.

The standard will assist all government agencies to focus on delivering information and services that are aligned to the needs of citizens and businesses and to ensure there is consistent approach to development and management of websites across the government.

2. SCOPE

The purpose of this standards and the guidelines is to establish a framework for the creation of professional Government websites. It is intended to ensure that Government websites are made citizen centric and visitor friendly.

The standards and guidelines aim to assist Government Ministries, Departments and Agencies including local governments in ensuring that their websites conform to internationally recognize good practices. It is the intention that this document addresses issues and practical challenges that Government agencies face during development and management of their websites.

Compliance to these guidelines will ensure a high degree of consistency and uniformity in content, coverage and presentation of information and shall further promote Bhutan online.

The different aspects covered in this standard are:

- Technical
- Structural
- Accessibility
- Usability
- Privacy
- Information Architecture
- Information Security
- Infrastructure

3. OBJECTIVE

The main objective of this standard is to provide guidance in the development and management of Government of Bhutan Websites thereby improving the quality, reliability, accuracy and accessibility of online information pertaining to Government Agencies and to ensure consistent experience for all users.

This standard is expected to:

- Ensure that Government, Ministries, Departments and Agencies meet the broader communication objectives of the Government of Bhutan
- Ensure that Government websites are updated, maintained with accurate information / content for public consumption
- Ensure that Government websites are usable and easily accessible by the citizens
- Guide IT personnel in designing, developing, managing and securing the websites within their respective agencies
- Introduce level of consistency throughout all Government websites positioning and functionality of the key website elements
- Better promote and foster the Royal Government of Bhutan Identity, making it easier for website visitors to identify websites belonging to Government agencies
- Build user confidence for information access, consume services and encourage uptake by the website visitors by improving repeat visits
- Make it easier for users to navigate thereby providing a more consistent user experience
- Reduce development and website maintenance cost
- Ensure accessibility to all user groups
- Improve international ranking

4. INTENDED AUDIENCE

This Bhutan Government Website Standards and Guidelines is a resource to be used by the government agencies while enhancing existing websites or while developing new websites. Following audience are required to refer this standard:

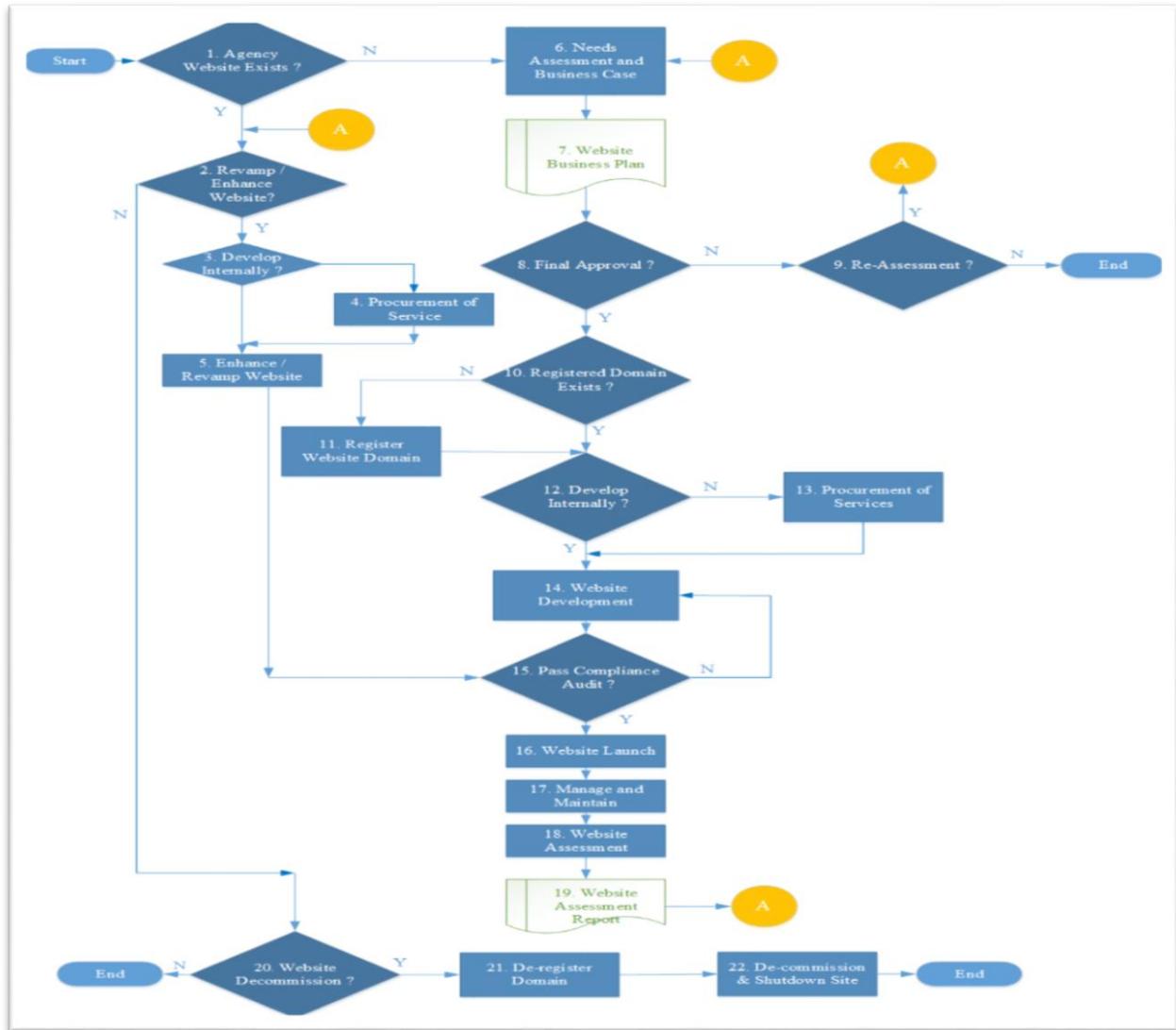
- Agency management while assessing the need for website
- Agency IT team while developing website or while monitoring the development of website
- External consultants hired to develop government website

5. WEBSITE MANAGEMENT FRAMEWORK

The website management framework must be used by all the government agencies for:

- Development of new websites or while doing major revamp of the existing websites
- Ongoing maintenance of the existing websites
- Decommissioning of the existing websites

5.1. WEBSITE MANAGEMENT PROCESS FLOW



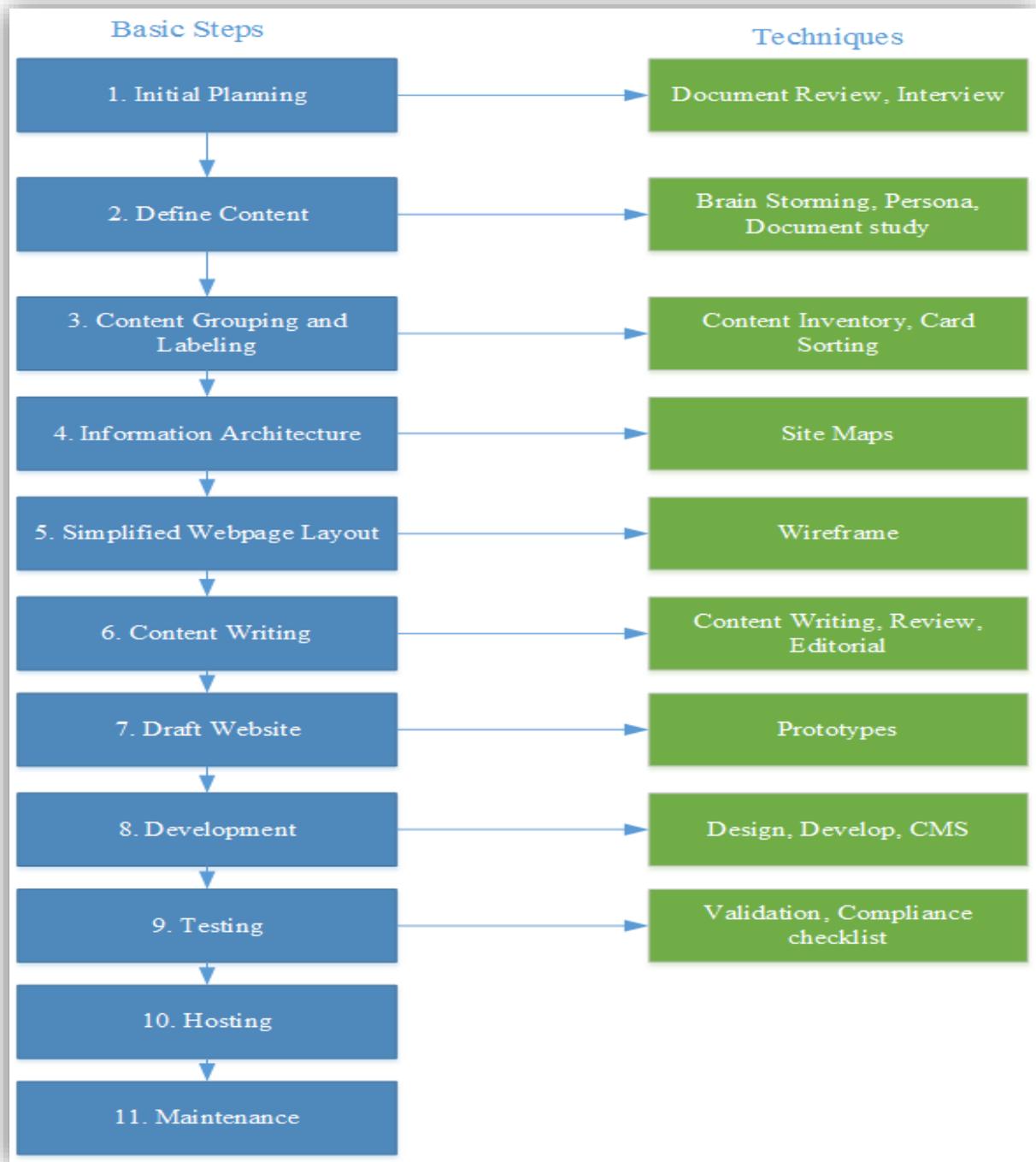
5.2. WEBSITE MANAGEMENT PROCESS DESCRIPTION

Sl. No.	Step	Role	Description
1	Agency Website Exists?	Agency IT	Agency IT team should conduct a review whether website exists or not. <ul style="list-style-type: none"> If the agency owns a website proceed to step 2. If there is no website owned by the agency then proceed to step 6.
2	Revamp / Enhance Website?	Agency Website Committee	If website exists owned by the agency, the agency website committee will decide whether the website should be revamped / enhanced. <ul style="list-style-type: none"> If the decision is to enhance then proceed to step 3. If the decision is not to enhance then proceed to step 20.
3	Develop Internally?	Agency Website Committee	If the previous decision is to continue with enhancement of existing website, decision is required on whether to develop enhancement internally or hire consultant to develop enhancement of the website. <ul style="list-style-type: none"> If decision is to develop enhancement internally then proceed to step 5 If decision is to enhance the website by hiring consultant then proceed to step 4
4	Procurement of Services	Procurement office + Agency Website Committee	Proceed with tendering for hiring of consultant. Solicit bids, evaluate bids, select consultant and award website enhancement work.
5	Enhance / Revamp Website	Agency IT / web master or Consultant	If decision is to develop enhancement internally then IT team will continue with enhancement of website. If consultant is hired to enhance the website then consultant will continue with enhancement of website. Agency IT team should monitor consultant's outputs.
6	Needs Assessment and Business Case	Agency Website Committee	In case the agency does not have website, the website committee in consultation with other business owners conducts the needs assessment and prepare a business case for establishing website for the agency.
7	Website Business Plan	Agency Website Committee	Based on the needs assessment and business case, a website business plan should be prepared. The website business plan will be submitted / presented to the Agency management.
8	Final Approval?	Agency Management	Agency management reviews the website business plan. <ul style="list-style-type: none"> If the plan is approved then proceed to step 10 If the business plan is not approved then proceed to step 9.
9	Re-Assessment?	Agency Management	The Agency Management can either ask the agency website committee to conduct re-assessment and prepare new business plan. <ul style="list-style-type: none"> If instruction is to conduct re-assessment then proceed to step 6 If re-assessment is not required then process ends
10	Registered Domain Name Exists?	IT Head	If establishment of website is approved then IT head shall check whether domain is registered in the name of agency. <ul style="list-style-type: none"> If domain is registered in the name of agency and the domain can be used then proceed to step 12

			<ul style="list-style-type: none"> If agency owns a domain but cannot be used then IT head shall de-register the existing domain and proceed to step 11 If the agency does not own a domain then proceed to step 11
11	Register website Domain	IT Head	IT head with support from management should register the domain.
12	Develop Internally?	Agency Website Committee	After the domain registration is complete, proceed with development decision. <ul style="list-style-type: none"> If decision is to develop enhancement internally then proceed to step 5 If decision is to enhance the website by hiring consultant then proceed to step 4
13	Procurement of Services	Procurement office + Agency Website Committee	Proceed with tendering for hiring of consultant. Solicit bids, evaluate bids, select consultant and award website enhancement work.
14	Website Development	Agency IT, web master or Consultant	If it is decided to develop internally then IT team will continue with development of website. If consultant is hired to develop the website then consultant will continue with development of website.
15	Pass Compliance Audit?	Website Management Team	Once the development / enhancement is complete, the Government Website Management Team shall conduct the compliance audit. <ul style="list-style-type: none"> If the website clear compliance audit, proceed to step 16 If the website fails the compliance audit then proceed with step 14 or 5 as appropriate
16	Website Launch	Agency Website Committee + Management	Once the website passes the compliance audit, agency can launch the website.
17	Manage and Maintain	Webmaster	After launch of website, web master manages and maintains the website. Minor enhancements, content management and security management are major activities during operation and maintenance of website.
18	Website Assessment	Agency Website Committee	The Agency Website Committee will conduct regular / periodic assessment of the website. Assessment will include analysis of website statistics, feedbacks and other related information on website usage.
19	Website Assessment Report	Agency Website Committee	Assessment report will be provided to agency management as well as Website Management Team for review. If there is need to enhance or revamp the website then proceed to step 2. If not modification is required process ends
20	Website Decommission?	IT Team	If it was decided that no enhancement is required then decision is to be made whether the website is to be decommissioned. <ul style="list-style-type: none"> If decommission is required proceed to step 21 If website is to be kept live process ends
21	De-register Domain	IT Head	If website is to be decommissioned then submit application for domain release. Once the domain is release, website will be decommissioned.
22	De-commission & Shutdown	Web Master	Keep backup of the website and re-configure the web server for any other use.

5.3. WEBSITE DEVELOPMENT PROCESS

Website development / enhancement / revamp steps are outlined below.



5.3.1. INITIAL PLANNING

Following aspects to be considered during initial planning for website development or enhancement:

- i. Understand the organizational vision, mission and objectives;
- ii. Define the goals and purpose to be accomplished by building the website. Purpose of the website can be to provide information to citizen, or online service delivery gateway. Goal can be to enhance online presence, transparency, and efficiency;
- iii. Analyze the target audience to identify if there is specific group of people that will help achieve the defined goals. Consider age group, sex, or interests, disabilities, and cognitive preferences;
- iv. Determine the type of information the target audience would be looking for in the website;
- v. Determine what services, functionality or information will be provided through the website;
- vi. Describe how users will interact with the website to meet their needs;
- vii. Consider what type of website structure will be appropriate.

Initial Planning Techniques

- i. **Document Study** – Document Review activities involves review of the legislative document (Acts, Charters, Rules and Regulations) to understand the mandates, functions and services provided by the agency. Other documents to be studied include Standard Operating Procedures (SoPs), and any other agency specific documents. Document study will allow the website management committee to identify content areas to be included in the website;
- ii. **Interviews** – Interviews are used to identify the user goals after prioritizing the target audience of the site. It is recommended to select adequate representation from each of the audience group to ensure reliable sampling of visitor behavior and characteristics.

5.3.2. WEBSITE AUDIENCE

All government agencies should design websites to accommodate all target groups / users.

- i. All government websites should aim to be inclusive to all users, bearing in mind the wide range of visitors' circumstances, computer and other access devices capability, technical knowledge and interests. The website structure should be user-centric;
- ii. In order to ensure accessibility for all visitors, government website should respond to visitor requirements. It is recommended that while planning a website, agency should carry out some form of market research and review of reference websites;
- iii. Agencies should ensure that the web content is equally accessible to people with disabilities including visual, auditory, physical, speech, cognitive, language, learning and neurological disabilities.

Audience identification Technique

Audience identification involves the following steps:

- i. Identification of audience groups or groupings
- ii. Website audience classification
- iii. Rating the impact on the content
- iv. Prioritization of the audience attributes

Identification of Audience Group or Groupings:

Following considerations are made while identifying audience group or groupings:

- i. Whether the site is aimed at one audience group or multiple audience groups
- ii. If the site is aimed at multiple audience groups then identify the audience groups e.g. citizen, tourists, employees, customers, students, etc.
- iii. Identify the audience attributes for each audience group

Website Audience Classification

Use the following audience classification tool as reference to classify the identified audience groups.

	Audience attributes	Example characteristics and scenarios	Your audiences' characteristics & scenarios	Impact H, M, L, NA
Who	Age and age groups	children, teenagers, baby-boomers, young adults, over 65, in their thirties		
	Personal life-style	resident, parent, single-parent, person with a disability, retired, tourist, Y-generation, school student, university student, migrant		
	Gender	mostly male, mostly female or both in equal numbers		
	Language	English as first language, English as a second language		
	Education	school, college, university, post-graduate		
	Learning preferences	practical demonstrations, learns by example, likes to know the theory, free-thinker, images rather than text, systematic learner, task-oriented, left-brain vs right-brain		
	Work attributes	employee, home duties, shift-worker, academic, professional, business owner, executive, career, unemployed, volunteer, specific industry sector		
	Expectations	what they expect based on their experience with similar websites		
	Existing knowledge	how much they already know about the content, product, service		
	Web and computer experience	none, low, medium, high		
How	On what device they will read it	PC, handheld device, large monitor, small monitor		
	Internet connection speed	fast broadband, standard broadband, slow		
Where	User's location	local, national, international – urban, regional, remote		
	Place where the page is read	at home, school, work, public library, on the road, in the field, public places		
Why	Why users seek the content	to be informed, complete a task, seek an answer, buy something, entertainment, training		
	Importance of the content to them	vital, useful, interesting		
	How they found the page	Google, link from other site, word-of-mouth, newsletter link, found it accidentally		

When	When it is read	at work between 9am and 5pm, during a lunch-break, after the children are in bed, weekends, at night, early morning		
------	-----------------	---	--	--

Rating the impact on the content

Rate each attribute in the Website audience classification tool as high (H), medium (M), low (L) or not applicable (NA), according to the degree of impact it will have on the style and nature of the content. Aspects of the content to consider while assessing the impact-rating for each attribute are:

- Style and tone of the writing
- Readability, vocabulary and comprehension
- Quantity of text and level of detail
- Use of search and navigation feature to discover the information
- Structure and method of imparting the message
- Provision of images, diagrams, video.

Prioritization of the audience attributes

Having completed the rating activity, prioritize the audience attributes for the whole site or for each relevant section of the website according to those that will have the highest impact on the nature and style of the content. Writers and editors then need to keep this front-of-mind when composing, structuring and editing content.

5.3.3. DEFINE CONTENT

Following activities are required in define content step:

- Identify the content required to support the services that will be provided on the website;
- Create list of content types and content that are needed on the websites;
- Evaluate for content types such as static, dynamic, functional or transactional;
- Review the existing content and assess if existing content meet user requirement.

Technique to Define Content

- Brainstorming** – Use brainstorming to define the content areas. This activity helps in enhancing content areas identified through document study during initial planning. Brainstorming technique works well if small group of three to five people with one person functioning as facilitator / moderator to provide guidance to the group
- Persona** – Creating personas, a hypothetical narrative of various website visitors, as a great way to figure how to structure content in the website. At basic level, developing persona is simply figuring out the different groups of visitors who may visit the site and profiling real people that fit into each of the user groups. It is recommended throughout the design process, use the profiled people as basis for designing and testing information architecture in the site
- Document Study** – Continue studying the agency documents to validate the outcomes of brainstorming and use of persona. Iterative process is required to finalize the content identification.

5.3.4. CONTENT GROUPING AND LABELING

Following activities are required in Content Grouping and Labeling Step:

- Determine how the content will be grouped on the website
- Determine logical content hierarchy
- Identify other grouping methods
- Identify related information

Following content organization pointers can be utilized to group and label the content:

Elements	Purpose
Titles	Use simple titles clearly explain the purpose of the page
Headings	Use Headings to separate main topics
Horizontal rules	Use Horizontal rules to separate main topics
Paragraphs	Use paragraphs to help divide large amount of data
Lists	Utilize list. Numbered or bullet when appropriate
Page Length	Maintain suitable web page lengths; about one or two pages are adequate
Information	Emphasize the most important information by placing it at the top of a web page
Other	<ul style="list-style-type: none"> • Incorporate a contact e-mail address • Include the date of information

Content Grouping and Labelling Techniques

- i. **Content Inventory** – Inventory of content that can be potentially published in the website site should be prepared. Content Inventory should contain Topic / Section, and Subsections. The topics / sections, and sub-sections will be used to prepare cards to be used in card sorting
- ii. **Card Sorting** – Card Sorting is user centric design method and used for creating and evaluating content and website structures. It is a simple way to figure out how to group and organize the content based on the user input. Card sorting involves writing each content set or page or an index card, and then letting site visitors sort them into groups based on the how they think the content should be structured. The persona created in the previous stage can be used to represent the site visitors

5.3.5. INFORMATION ARCHITECTURE DEVELOPMENT

Information Architecture is concerned with how information is organized, structured, labeled and presented for maximum access. The information structure, relationship between the information and meaning should be maintained across all presentation styles.

The web designer needs to make decision about the Web site content and functionality. It includes the detailed analysis of the content of the Website in terms of information covered, processing required, etc.

- Using information gathered in the previous steps, site map is developed. The site map is the list of all main topic areas of the site as well as sub-topics. This serves as a guide to what content will be on the site, and is essential to developing a consistent, easy to understand site navigation system.
- The web developer should decide the technologies to be implemented. Salient features like interactive forms, banners, animations are discussed and finalized
- Prepare test cases for testing the website once the developer's complete development and testing of the website. The test cases will be used for executing the Acceptance Testing
- Decide the Content Management system (CMS) to be used for development and management of website

Refer Information Architecture (Section 12.1) for details on information architecture.

Information Architecture Techniques

- i. **Site Maps** – Site maps are visual representation of the content areas which are quick and easy ways to visually demote how different pages and content relate to one another. This technique used to mock-up how content will be arranged. The sitemaps show how the pages on the site are grouped, the order of appearance and the relationship between the parent and child pages. The sitemap is created after few iterations of card sorting.

5.3.6. SIMPLIFIED WEBPAGE LAYOUT

These steps required the following activities:

- Identify all the page components;

- Prioritize the components on the page;
- Visually frame the page for the designers and developers to be used during design and development

Decide the type of layout viz. linear, hierarchical, and webbed or combination of all layout types. The layout links, or connects, the web pages in a different structure to define how users navigate through the site and view web pages. The layout is selected based on the assessment how users can most easily navigate through the site and complete tasks and view the web site content.

A linear layout connects web pages in a straight line. A linear layout is appropriate if the information on the web pages should be read in a specific order.

A hierarchical layout connects web pages in a tree-like structure. This layout works well on a site with main index or table of contents page that links to all other Web pages. With this layout, the main index page would display general information and secondary pages include information that is more detailed.

A Webbed web site layout has no fixed structure. This layout works best on web sites with information that does not need to be read in a specific order and with many navigation options that users can select.

Technique for Simplified Webpage Layout

- Wireframes** – A Wireframe is visual illustration or blueprint of a webpage that closely represents how page layout looks like. Wireframes not only give outline of design layout but by putting content into wireframes gives a good sense of how the content is arranged in relation to other content and how well the information architecture achieves the goals and objectives of having agency website.

A wireframe identifies all features on a page, prioritizes the features so that the most important features are prominently positioned on the page and visually represents the information architecture

5.3.7. CONTENT WRITING

The content writing step involves the following activities:

- Organize the page content;
- Create the content for each page identified;
- Write, review and go through editorial activities.

For effective content writing refer Web Content (Section 12)

5.3.8. DRAFT WEBSITE

Draft website preparation will include the following:

- Using information gathered and analyzed in previous phases, determine the look and feel of the website;
- Incorporate the information that strengthen the identity of the agency like agency logo, and agency brand colour;
- Develop templates for pages;
- Prepare prototypes using appropriate tools. First prototype should be wireframe providing placement of all the design components. Second prototype should an Adobe Design file or design using other mockup design tools;
- The agency team should review the design and provide suggestions, comments and feedbacks as appropriate until the design is acceptable. The agency team should comprise of management and technical personnel;
- Multiple iterations of design assessment and review should be followed;
- Keep the content as close as the actual content of the website;
- The communication records should be maintained and reserved in order to avoid roll backs and other website development risks.

Website Draft Technique

- Prototyping** – The higher fidelity screen designs are created after designers review the wireframes. Screen designs are developed as full colour prototypes that illustrate the visual design of various page layouts of

the website, including intended placement of various elements of the web page. The page content should be near actual content.

- ii. **Templates** – Existing template can be used for draft websites. Templates can be in-house developed templates or downloaded templates. It is advised to avoid use of freely available templates. Such templates can be used only if the webmaster is well versed with modification and support the template if the template is phased out by the developer.

5.3.9. DEVELOPMENT

Development involves the following activities in iterative manner:

- Install and configure the CMS and develop all the pages in the CMS;
- The development stage is the point where the website itself is created. The developer should take all on the design outputs to create the actual, functional site;
- Develop the home page first followed by “shell” for the interior pages. The shell serves as a template for the content pages;
- Review the in-progress site to ensure all requirements are incorporated in the site. Avoid any changes to the structure or layout of the site. Changes to the structure and layout will slow down the development process and excessive changes would result in additional cost;
- Update the content in home page as well as in all the shell pages.

Refer Technical Standards (Section 9) and Structural Standards (Section 10) for details during development of the websites.

5.3.10. TESTING

Websites should be validated and tested with automatic tools and human reviews. Automated methods are generally rapid but cannot identify all issues. Human Review can help in issue like ensuring clarity of language and ease of navigation.

Testing should involve the following activities:

- Developers should test complete functionality of forms or other scripts, test for last minute compatibility issues;
- Validation of website to ensure the site complies with the national web standards;
- Agency website team should test the website as per the test cases prepared to assess for acceptance of the website;
- Communicate any issues or changes to the developer for final modification. The changes should not impact the structure and layout of the website;
- Once the issues are fixed and changes incorporated, conduct final acceptance testing;
- Communicate the approval information to developer.

Refer Referenced Web Technology Specification (Section 9.4) for tools for automated validation tools.

A web site should be tested at various stages of the web design and development. The testing process should include review of page content, functionality and usability. Basic steps to test content and functionality are:

- Reviewing for accurate spelling and proofreading content including page titles;
- Check links to ensure that all the links are not broken and are linked correctly;
- Check graphics to confirm the graphics elements are displayed properly and are linked correctly;
- Test forms and other interactive page elements;
- Test pages to check for speed of loading on lower speed connection;
- Check for print functions to assess the page prints work as required;
- Test web pages in different browsers and different devices to verify the site is displayed correctly;
- Use of self-voicing browsers, screen readers, magnification software, small display, etc.

5.3.11. HOSTING

Hosting involves the following activities:

- Developers will prepare the website for launch and communicate the tentative time for uploading the site to live server. If website exists, then uploading time should be decided in such a way that there is minimum impact to the website users;
- Upload the files to the live server and put the website through one last run-through. The run-through is precautionary to conform that all the files have been uploaded correctly, and that the site continues to be fully functional.

5.3.12. MAINTENANCE

Website maintenance involves the following activities

- Update content regularly;
- Assess website as and when there is change in the services provided by the agency;
- Periodically check links to ensure all the links are active;
- Monitor web server and analyze the website logs about website usage;
- Analyze the cookies to review the information about the use request.

6. GOVERNMENT OF BHUTAN IDENTIFIERS

6.1. BHUTAN GOVERNMENT IDENTITY

The reliability and authenticity of the Government websites is an important factor to be considered. Visitors to a Government website are concerned about the reliability and authenticity of the official status of the website before trusting its content.

It is important to let visitors know that the information and services being offered on a given agency website is official.

All Websites and Portal under the Government of Bhutan Domain at any hierarchical level (top Government Offices, Constitutional Bodies, Ministries, Departments, Organizations and District Administrations) must prominently display strong Bhutan Identity and ownership of Bhutanese Government.

In order to achieve above mentioned objectives, the guidelines stipulated below should be adhered to:

- i. The Government logo should be displayed on the home page of the government websites
- ii. Use of event logos is permitted but should be as per the guideline prescribing the usage of event logos
- iii. The Government agencies should display their official logos and name of the Agency in header of all the pages of their respective websites
- iv. The homepage and all the important entry pages of the website should display the ownership information, copyright information, privacy statement link, site map link, in the footer
- v. It is recommended that lineage of the agency is indicated at the bottom of the home page and all important entry pages.

1. 'This is the official Website of Department of Information Technology and Telecom, Ministry of Information and Communication, Royal Government of Bhutan'
2. 'This website belongs to the Application Division, Department of Information Technology and Telecom, Ministry of Information and Communication, Royal Government of Bhutan'
3. 'This is the official Website of the Thimphu Dzongkhag Administration'

- vi. Agencies should ensure that all subsequent pages of the website display ownership information in a summarized form. It is important that each webpage belonging to a site displays the relevant ownership information
- vii. For websites belonging to Inter-agency initiatives involving multiple Government agencies which are difficult to list on the home page, the ownership should be reflected clearly at the bottom of the page with detailed information provided in the 'About Website section'
- viii. The page title must be complete and should be displayed as Agency Name followed by Government of Bhutan. This will facilitate ease of identification, increase visibility across different search engines and provide support for visually impaired users to avoid confusion.

6.2. GOVERNMENT DOMAINS

The Universal Resource Locator (URL) / Domain Name / Web Address of any government website is a strong indicator of its authenticity and status of being official. The role of a designated Government domain name assumes a lot of significance especially with the proliferation of Websites which resemble Government websites and launched to provide reliable government information and services.

Establishing a commonly acceptable Domain Name Service (DNS) naming convention, agencies will establish their online identity while minimizing complexities of choosing a name. Knowing particular domains of the department will be very simple since a particular pattern will always be followed.

It is highly recommended that the government websites domains are registered as gov.bt.

Following indicative categories can be referred while registering domain.

Sl. No.	Institution / Agency	Domain Format
1	National / Government Portal	Gov.bt
2	Ministries	Ministry.gov.bt
3	Departments	Department.gov.bt
4	Autonomous Agencies	Agency.gov.bt
5	Constitutional Offices	Office.bt
6	Dzongkhags	Dzongkhag.gov.bt
7	Commissions*	Commission.bt
8	Project Authorities	Projectauthority.bt
9	Councils	Council.bt
10	Tertiary Institutions	Institution.edu.bt
11	Schools	School.edu.bt

*Commissions are the temporary offices set for specific purpose like the Pay Commission. Such establishments will be dissolved once the mandated activities are complete.

Those agencies not complying above domain name format are recommended to register additional domain and make sure same website is accessible from all the URLs.

Registration and administration of the domain names should be done by the IT / Head / web master / web master designate of the agency and registered with BTNIC or any other domain registrar authorized by Ministry of Information and Communications, Royal Government of Bhutan.

It is the responsibility of the respective Government agency to choose a suitable domain name. A set of guidelines for selecting a suitable domain name to align with the overall guidelines on registration of domains is suggested below:

- i. Choose a single short word (word) that establishes the identity of the agency, provided that the name is not a common/ generic name shared by two or more departments;
- ii. Choose abbreviation that are easy to remember. This is more appropriate for agencies with permanent existence. Popular terms used to describe the agency can also be used for domain name. If required multiple domains can be registered (using abbreviation and popular term) and the different domains direct the site visitors to same website;
- iii. If abbreviation is used then Prefix D (for department) or M (for Ministry) and insert O (to denote Of) within the abbreviation to make it easy to guess / remember is recommended. Domain name for Ministries is expected to contain O for Of. Departments can have domain name without O for Of. Those ministries not using abbreviations are recommended to register domain made of abbreviation and point to single website;
- iv. Use short forms if it makes sense (e.g., exams for examination);
- v. When there are unrelated / multiple subjects assigned to the agencies, choose the most important well-known subject (which is less likely to change) for the domain name;
- vi. In case of Dzongkhags, Divisions and Local Government agencies where the area name is long, shorten it in meaningful name that is easy to guess and remember;
- vii. Use of dash, underscore, numbers and special characters like \$, @, %, etc. should be avoided. However, if the agency name comprises of number then domain name can contain numbers.

6.3. PROCEDURE FOR REGISTERING A DOMAIN

All government agencies that wish to register domain names should follow the process required by BTNIC. Decision of BTNIC will be final.

Domain registration process is described briefly as follows:

- i. Decide the domain name and check the availability of decided domain name with BTNIC. Domain name availability can be checked online at https://www.nic.bt/?page_id=2
- ii. If domain is available then download the domain registration application form at https://www.bt.bt/forms/Domain_Reg.pdf
- iii. Also review the “Acceptable Use Policy” available at <http://www.druknet.bt/forms/aup.pdf>
- iv. Fill up the application form and submit the application to the nearest Bhutan Telecom office along with letter signed by head of the Agency / Authorized Signatory for the agency
- v. If website hosting is planned at Bhutan Telecom hosting infrastructure, download the web hosting form (<http://www.druknet.bt/forms/webhostingnew.pdf>), fill up and submit to the nearest Bhutan Telecom Office. Only web hosting form is sufficient if website hosting is planned at Bhutan Telecom hosting facility
- vi. If website is to be hosted in infrastructure not managed by Bhutan Telecom, domain forwarding form should be included in the application. Domain forwarding form is available at <http://www.druknet.bt/forms/domainforwarding%20form.pdf>

Contact information should be updated in the BTNIC should be updated as and when there is change in contact information.

6.4. GUIDELINES FOR DOMAIN NAME CHANGE

Any government agency may change its domain name for the following reasons:

- i. To comply with new Government policy, standards and guidelines
- ii. Due to changes in agency’s mandates and service portfolio, new nomenclature, etc.
- iii. Agency may change its domain name based on the user preference in such cases the Institution should weigh the various reasons for the least significant to the most significant:
 - a. To leave the domain name unchanged if the changes in mandates / portfolio / nomenclature do not substantially affect the domain name
 - b. To leave the domain name unchanged if the agency changes do not substantially affect domain name (subjects not fully changed)
 - c. To change only the web domain name and leave the email addresses unchanged
 - d. To change the domain name (web and email) to reflect the new name
- iv. Agency registers the new domain name in accordance with the policy and procedure of registering a domain name as per section 6.2 and 6.3 of this guideline.
- v. The old domain name should remain for a period of Six (6) months with a redirection page to the new domain name with notification to all users
- vi. Other channels (social media official page, print and broadcast media) should be used to communicate the change in domain name. Mass mail campaign can be useful to send information to existing contacts
- vii. The email addresses of the old domain should carry an auto response to send mails to new address and that all mails should be forwarded to new email ID assigned

6.5. DOMAIN DISPUTE RESOLUTION PROCEDURE

Domain registration will be first come first serve basis and decision of the BTNIC will be final.

7. GOVERNMENT INFORMATION ONLINE

A crucial element of an effective web presence is quality and relevance of information posted on government website since internet is becoming a preferred means of accessing government information and services. All government agencies should develop websites that contain informative and up-to-date content. A well written content caters to the need of wide range of audiences and easily accessible. Agencies must ensure that:

- i. Information provided is current
- ii. Information provided on website meets the needs of consumers
- iii. There is a consistent approach across websites
- iv. At least a minimum set of information should be provided as per the requirement in section 7.1

Information presented on a government website should be consistent with government policies to avoid the possibility of damage to both government and site visitors if the information is incorrect or inappropriate.

Similar structure should be applied across government websites to achieve consistency which is important in helping site visitors to access government information more effectively online.

The provision of Government Information online should be guided by the following:

- i. As best practice, it is recommended that all Government agencies should include publications that are available to the public through other forms of media (such as hardcopy or audio) on their website. The same should be captured and lined in the online library. However, if it is not practicable due to, high cost, limited benefits, low demand, publication complexity – information on how to obtain a copy in its original form should be posted on the website
- ii. Any decision not to publish information in electronic form should rest with an appropriate Senior executive or delegate within an agency
- iii. Information meant of internal consumption should be restricted to intranets to avoid misinterpretation and confusion among the public visiting the site. If the internal consumption content is published in the website, it is recommended that appropriate description should be provided on the top of the pages.

7.1. MINIMUM CONTENT FOR ALL GOVERNMENT WEBSITES

7.1.1. REQUIRED CONTENT

Certain information is necessary elements which are important in all Government agency website. All site visitors expect to find the same minimum information on all government website under same links. It is therefore required that home page should provide the following information:

- i. Website Banner
 - a. Government Logo
 - b. Government Agency Name
 - c. Colours of the National Flag and / or agency brand theme
- ii. About the Agency, and links to:
 - a. Organizational Set-up / Organogram
 - b. Role and Functions (Mission, Vision, Mandate)
 - c. Public Services links
 - d. Tenders and Notifications
 - e. Press Releases / Announcements
 - f. Associated Organizations (Related Links)
 - g. Contact Address: Agency Name, Office Address, P.O. Box
 - h. Telephone: (PABX)
 - i. Facsimile
 - j. Email: info / support email address
- iii. Search Function
- iv. Site Map
- v. Date and Time of posts
- vi. Last update date and time to be displayed in the footer

7.1.2. RECOMMENDED CONTENT

The home page is recommended to provide following information, if available.

- i. Social Media Link recommended. The Social media link should link to official social media pages / handles
- ii. Agency Event calendar is recommended
- iii. Properly segregated Media section is recommended
- iv. Physical Location information (location on Google Map recommended)
- v. Major projects and Schemes
- vi. Government Agency Logo, if available
- vii. Customer Service Strategy / Charter

viii. Publications (Annual Reports, strategy Documents, etc.)

The web master (s) / website manager (s) of the agency must continuously endeavor to determine the kind of information that would benefit the website’s audience so as to provide the information appropriately.

Individual pages of the website should have consistent look and feel.

7.2. COMMON PAGE ELEMENTS

The web page header should have agency logo, agency name and tagline of the agency. Other option is to have the official letterhead as the web page header. If government logo is used then the government logo should be placed at the top left corner and the Agency Name should be placed in the middle of the header. Then agency logo should be placed at the right corner of the header.

The logo should also serve as a link to the home page.

Each page should contain the agency footer graphic element placed at the bottom of the page. The footer graphic should contain links to Site Map, Contact Us, Privacy Statement, Copyright statement, Legal / Disclaimer Statement, and Accessibility statement.

7.3. INFORMATION REQUEST AND FEEDBACK

All government websites should provide the following information for information request from the agency:

- i. Full contact details, Physical service location, Fax and telephone numbers, and mailing addresses
- ii. Email addresses for the entity responsible for maintaining the website for the purpose of reporting fault should be provided
- iii. Contact information of the web master (s) / website manager (s) should be provided
- iv. A general enquiry email address for the agency should be created / established, which consumer can contact with regard to the agency service offering

Feedback from the public shall be gathered through the following means

- i. Feedback should be collected through online forms
- ii. Feedback form should be prominently displayed on the website
- iii. Agencies should respond to the feedback and provide guidance on how the forms are processed
- iv. Agencies should endeavor to provide specific period for which responses to issues raised by the public will be provided.
- v. The Information Request / Feedback forms should be web form as well as downloadable form

The information request / feedback form should have, but not limited to, the following fields:

Sl. No.	Field Name	Description	Requirement
1	Name	Name of the site visitor submitting the information	Mandatory
2	Email	Email of the site visitor submitting the information	Mandatory
3	Phone	Contact Phone Number (land line or Mobile Number) of the site visitor submitting the information	Optional

4	Submission Type	Dropdown for Type of Submission like Information Request, Service Feedback, Website Feedback, Complain, Compliment, and Others.	Mandatory
5	Submission Text	Actual submission content	Mandatory
6	CAPTCHA	The CAPTCHA (image / audio)	Mandatory

7.4. LEGISLATIVE AND SECTOR INFORMATION

Policy documents, legislative and sector information related to the agency should be provided on the website. Avoid duplicate information. If relevant information available in other government website provide link to the relevant information from other websites, the legislative and sector information shall include, but not limited to, the following:

- i. Bills and Acts related to the agency
- ii. Sectoral policy documents related to the agency
- iii. Circulars related to the agency
- iv. Publications from the agency or related to the agency
- v. Best Practices Guidelines

All information/materials / announcements and events that have expired should be archived.

All important announcements should create RSS feed post or Atom feed post. The posts should be syndicated by the gov.bt portal and can be searched in gov.bt portal.

7.5. ELECTRONIC FORMS

Several types of forms (interactive forms, e-forms and downloadable forms) can be used to present and collect information from site visitors.

- i. Agencies should ensure that for interactive forms, appropriate security precautions should be put in place to safeguard visitor information during transmission and storage
- ii. Agencies should ensure that e-forms and downloadable forms are in compatible formats and where special software is required, a link to download the required software must be provided. Recommended format for downloadable forms is PDF format.
- iii. Agencies should continuously endeavor to provide online interactive forms, and where not possible, downloadable form should be provided

7.6. INFORMATION NOT PERMITTED ON GOVERNMENT WEBSITE

There is set of information that should not be published in government agency website. Agencies should ensure that following content should not be published in their website:

- i. Government agency website shall not post information that does not promote their mandate. Following content shall not be permitted:
 - a. Commercial banner advertisement
 - b. Personal information
 - c. Politically partisan content
 - d. Information in text, visual or any other media which may offend / harm national sentiments, religious communities as well as security and integrity of the Country shall be avoided on the government agency websites

- e. Any Information which is confidential or only for restricted user base
- f. Physical and information security procedures
- g. Google Adwords, AdSense or any other Online Advertisement
- ii. It is permitted to acknowledge sponsors and partners as decided by the head of the agency
- iii. Banners that promote and link to other Government agencies are permissible, provided that no fees are charged for the same.

8. TECHNICAL STANDARD

8.1. SUPPORTED BROWSERS AND DEVICES

Websites are expected to support:

- i. The current and prior release of internet explorer, MS Edge Firefox, Chrome and Safari
- ii. A desktop / laptop terminal device with a minimum resolution of 1024X768
- iii. All the functionality should be accessible using a keyboard along with mouse or touchpad

Use website statistics and use trends (i.e. analytics) to determine the most common browsers, operating systems, screen resolutions, devices. Common browsers and devices should be supported. Web masters should use Web Analytics tool to generate site usage statistics.

Support for mobile devices, such as smart phones and tablets, is most. Standard compliance, responsive design, and feature detection (instead of device detection) should be used to be inclusive of as many devices as possible.

8.2. ANALYTICS

Any stable Web Analytics tool is recommended for tracking statistics for all government agency websites. The web analytics tool should support standard statistical reports: top keywords and search engines, websites, top page URLs, page titles, visitor countries, operating systems, browsers, screen resolution, desktop VS mobile, engagement (time on site, pages per visit, repeated visits), custom variables, top entry / exit pages, downloaded files. The selected Web Analytics tool should provide, but not limited to, the following:

- i. **Real time data updates** – Watch real time flow of visits to the website. Ability to get a detailed view of site visitors, and pages visited
- ii. **Customizable Dashboard** – Ability to create new dashboards with widget configuration fit the requirement
- iii. **Row Evolution** – Ability to view current and past metric data for any row in any report or generation of trend for a metric
- iv. **Event Tracking** – Ability to measure any interaction by users on the website
- v. **Content Tracking** – Ability to measure impressions and clicks for image banners, text banners and any element on the website pages
- vi. **Site Search Analytics** – Ability to track searches done on internal site search engine
- vii. **Geolocation**–Ability to locate site visitors for accurate detection of country, Region, City
- viii. **Page Transitions** – Ability to view what visitors did before, and after viewing specific page
- ix. **Track traffic from search engines** – Ability to track the traffic from different search engines

Some popular web analytics tools are Google Analytics, Clicky, Mint, Church Analytics, KISSmetrics, Open Web Analytics, Clicktale, CrazyEgg, Piwik, CloudFlare.

8.3. REFERENCED WEB TECHNOLOGY SPECIFICATIONS

Technology specifications released by the World Wide Web Consortium (W3C) as a recommendation are acceptable for use, taking into consideration:

- i. Workarounds or other complexities are not needed in order to confirm to the specification
- ii. The specification is relatively current and does not contain elements which are deprecated in a newer specification for the same technology
- iii. The specification is widely recognized and implemented in the most recent versions of all major browsers
- iv. A solution is implemented for legacy browsers if the specification is not supported in such browsers
- v. A solution is implemented for browsers which do not support CSS and JavaScript or those which have CSS and JavaScript disabled
- vi. A solution is implemented for accessibility software and devices

8.3.1. VALIDATION

All markup languages including HTML, XHTML, XML (such as RSS and Atom feeds) as well as CSS must be valid. W3C provides online validator services which can be used to validate markup and CSS:

- i. W3C Markup Validation Service (<http://validator.w3.org/>)
- ii. W3C CSS Validation Service (<http://jigsaw.w3.org/css-validator/>)
- iii. Unicorn – W3C's Unified Validator Service (<http://validator.w3.org/unicorn/>)

Many web development editors and tools have validators built-in therefore it is encouraged to use the most recent versions of development software to ensure markup being checked against the most recent W3C standards.

8.4. HTML

HTML 5 is recommended. This specification defines an abstract language, as well as, two concrete syntaxes. If HTML 5 is not feasible then XHTML should be used. The following should be taken into consideration while using markup language:

- i. Features which have no support or partial support on current browsers should be avoided
- ii. Native HTML5 accessibility features which have no support or partial support in current browsers should use WAI-ARIA features.
- iii. Variations in layout or functionality for legacy browsers which do not support HTML should be negligible
- iv. The website should be thoroughly tested and verified to be working in all supported browsers and devices including those with CSS and JavaScript disabled

XHTML TM 1.0 The Extensible Hyper Text markup Language (Second Edition) or later is acceptable. This specification is a reformulation of the HTML 4 specification therefore HTML 4 Elements and HTML 4 Attributes are applicable. Deprecated elements and attributes should be avoided. This specification is commonly used when a website is not able to provide legacy browser support if HTML 5 is used instead.

Additional Resources:

- i. Recommended Doctype Declaration to use in your web document (<https://www.w3.org/QA/2002/04/valid-dtd-list.html>)
- ii. W3C: HTML 5 Frequently Asked Questions, FAQs (<https://www.w3.org/html/wiki/FAQs>)

8.5. CSS

Both CSS Level 3 specifications that have been released as W3C recommendations and Cascading Style Sheets Level 2 Revision 1 (CSS 2.1) Specification are recommended. The following should be taken into consideration while using custom style sheets:

- i. CSS should be implemented in such a way that the website will ‘gracefully degrade’ in the order as follows:
 - a. W3C CSS level 3 features;
 - b. Proprietary browser specific CSS features;
 - c. W3C CSS 2.1 features;
 - d. Default browser styling where CSS is not supported or has been disabled by the user
- ii. Any browser specific CSS features that do not comply with W3C CSS level 3 features or CSS features that are implemented as experimental should be avoided
- iii. Avoid the variation in layout or styling for legacy browsers that do not support Level 3 features
- iv. Websites (new, revamped, enhanced) should be thoroughly tested and verified to be working in all supported browsers and devices before launching the website for public access

8.6. ACCESSIBILITY

Minimum of Web Content Accessibility Guidelines, WCAG 2.0 (<https://www.w3.org/TR/WCAG20/>) conformance level A is required. In addition to conformance level, other WCAG 2.0 Confirmation Requirement (<https://www.w3.org/TR/WCAG20/#conformance-reqs>) must be met. Conformance claims should follow the Website Accessibility Conformance Evaluation Methodology, WCAG-EM, 1.0 (www.w3.org/TR/WCAG-EM/) or any other similar standardized evaluation process. Some of the requirements for WCAG 2.0 conformance level A are:

- i. 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. All the non-text content that is presented to the user has a text alternative that serves the equivalent purpose.
- ii. Captions should be provided for all pre-recorded audio content except when the media is a media alternative for text and is clearly labeled as such
- iii. An alternative should be provided for time-based media or audio description of the prerecorded video content except when the media is a media alternative for text and is clearly labelled as such
- iv. 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
- v. All functionality of the content is operable through a keyboard interface without requiring specific timings for individual keystrokes. However, this does not forbid and should not discourage providing mouse input or other input methods in addition to keyboard operation
- vi. No Keyboard Trap – If keyboard focus can be moved to a component of a page using a keyboard interface then focus can be moved away from the component using a keyboard interface
- vii. Provide visitors enough time to read and use content. If time limit is set then visitor is allowed to turn off the time limit, visitor is allowed to adjust the time limit, visitor is warned before time expires and given at least 20 seconds to extend the limit with a simple action (e.g. press the space bar) and the visitor is allowed to extend the time limit at least ten times
- viii. 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 site visitor to pause, stop, or hide it unless the movement, blinking, or scrolling is part of an activity

- ix. Auto-updating – For any auto-updating information that (1) starts automatically and (2) is presented in parallel with other content, there is mechanism for the user to pause, stop, or hide it or to control the frequency of the update unless the auto-updating or part of an activity where it is essential
- x. Do not design content in a way that is known to cause seizures -- Web pages do not contain anything that flashes more than three times in any one second period.
- xi. Provide ways to help users navigate, find content and determine where the content is. A mechanism is available to bypass blocks of content that are repeated on multiple web pages. Page tiles describe the topic or purpose.
- xii. Make Web pages appear and operate in predictable ways. Changing the settings of any user interface component does not automatically cause a change of context unless the visitor has been advised of the behavior before using the component
- xiii. Input Assistance: Help visitors avoid and correct mistakes
 - a. Error identification – if an input error is automatically detected, the item that is in error is identified and the error is described to the visitor in text
 - b. Labels or Instructions – Labels or instructions are provided when content requires user input
- xiv. Content must be robust enough that it can be interpreted reliably by a wide variety of site visitors and assistive technologies.

Conformance to Accessible Rich Internet Application, WAI-ARIA, 1.0 (<https://www.w3.org/TR/wai-aria/>) is recommended. The WAI-ARIA specification defines new ways for functionality to be provided to assistive technologies. This specification should be used for dynamic content and advanced user interface controls developed with Ajax, HTML, JavaScript and related technologies. WAI-AIRA specification is also applicable for features like documents that are useful for defining layouts, content structuring and creating content relationships.

Additional Resources

- i. Web Accessibility Initiative, WAI (<https://www.w3.org/WAI/>)
- ii. How to Meet WCAG 2.0 (<https://www.w3.org/WAI/WCAG20/quickref/>) Checklist and Quick Reference
- iii. WAVE Web Accessibility Evaluation Tool (<http://wave.webaim.org/>)

8.7. MOBILE

Compliance to Mobile Web Best Practices 1.0 (<https://www.w3.org/TR/mobile-bp/>) is recommended when creating websites. This will ensure the websites are accessible in different screen sizes. Some of the salient requirements are:

- i. Ensure that content is provided by accessing URI yields a thematically coherent experience when accessed from different devices. The content should be accessible on a range of devices irrespective of difference in presentation capabilities and access mechanism. Websites may paginate their content in various ways corresponding to difference in device characteristics
- ii. Exploit device capabilities to provide an enhanced user experience
- iii. Take reasonable steps to work around deficient implementation. Deficient means non-support of mandatory features of a relevant standard or recommendation.
- iv. Carry out testing on actual devices as well as emulators. Also test with specific features disabled.
- v. Because of the limitations in display and of input mechanisms, the possible absence of a pointing device and other constraints of mobile devices, care should be exercised in defining the structure and the navigation model of the website. Some important aspects of Navigation and Links are:
 - a. URIs of Site Entry Points -- Keep the URIs of site entry points short
 - b. Navigation Bar -- It is recommended to provide minimal navigation at the top of the page
 - c. Balanced Structure -- Take into account the trade-off between having too many links on a page and asking the user to follow too many links to reach what they are looking for

- d. Navigation Mechanism – Provide consistent navigation mechanism. A ‘drill-down’ method, based on major headings, can provided an effective means of navigation.
- e. Access Keys – Assign Access keys to links in navigational menus and frequently accessed functionality
- f. Refreshing, Redirection and Spawned Windows – Avoid pop-ups or other windows to appear and do not change the current window without informing the users. It is recommended to avoid periodically auto-refreshing pages, unless the site visitor is information and means to stop it is provided
- vi. Page Layout and Content – This refers to the site visitor’s perception of the delivered content. Some important aspects for page layout and content are:
 - a. Page Content – Ensure that content us suitable for use in a mobile context, user clear and simple language and limit content to what the target audience would be interested in
 - b. Page Size -- It is recommended to divide pages into usable portions and the overall size of page is appropriate to the memory limitation of the device
 - c. Scrolling – Limit Scrolling to one direction, unless secondary scrolling cannot be avoided
 - d. Graphics – Avoid using images that cannot be rendered by the device. Large or high resolution images except where critical information would otherwise be lost should be avoided. Do not use graphics for spacing
 - e. Colour – Ensure that information conveyed with colour is also available without color. Ensure that foreground and background colour combinations provided sufficient contrast
 - f. Background Images – When using background images make sure that content remains readable on the device
- vii. Frames – Do not use frames as many mobile devices do not support frames.
- viii. Use features of the markup language to indicate logical document structure rather than formatting effects
- ix. Do not use nested tables or tables unless devices are known to support tables. As far as possible use an alternative to tabular presentation
- x. Provide a text equivalent for every non-text element
- xi. Do not use pixel measures and do not use absolute units in markup language attribute values and style sheet property values
- xii. Use style sheets to control layout and presentation, unless devices are known not to support them. Organize content so that if necessary the content may be read without style sheets

Additional Resources for reference:

- i. Mobile Web @ W3C (<https://www.w3.org/Mobile/>)
- ii. W3C mobileOK Checker (<https://github.com/w3c/Mobile-Checker>)

8.8. FILES

8.8.1. NAMING CONVENTIONS

Folders and filename (including web pages, pdf files, and other downloadable application files) should be concise yet descriptive of the file. File names should be maintained to be same or similar to the document title when applicable. Avoid use of special characters and spaces should be replaced with hyphens (-) or underscores (_). Folder and filenames which are exposed in the website’s URL should be understandable and memorable.

8.8.2. FILE STRUCTURE

Whenever folders and files are renamed or moved make sure that necessary changes are made in URL and URI used to access the files by site visitors. File structure should be created as such that the structure allows for expected revisions and additions. Use a permanent URL for the most current version of a document and archived copies using specific version numbers. There must be provision to notify the users if they are not viewing the most recent version of the document / content.

Many web server technologies allow the URL to be rewritten or redirected so that the permanent URL is different than the underlying internal file structure. Such technology is useful while organizing file structure.

8.8.3. FILE SIZE OPTIMIZATION

Compression and optimization techniques should be used to keep the file sizes small. Tools like GZIP can be used to send webpage file to the browser instead of plain web file. In Apache web server compression is achieved using mod-gzip. This includes all files which are delivered to the web browser, such as html, CSS, scripting files, images, audio and video files, and document / application files (pdf, word, etc.). For managing images refer section 8.11.2.

8.9. CLEAN URLS

Content Management Systems like Drupal use and generate URLs for website pages that look like <http://www.example.com/?q=node/83>. Such URLs are hard to read and may prevent some search engines from indexing all the pages of websites.

Google Webmaster Guidelines states:

“If the decision is to use dynamic pages (i.e. the URL contains a “?” character), be aware that not every search engine spider crawls dynamic pages as well as static pages. It helps to keep the parameters short and the number of them few.”

Clean / semantic / search engine friendly URLs are good as they look prettier, easier to remember, easier to link to both internally or to other websites and help cut down on typos.

It is recommended page URLs should use clean URL concept by removing “?” in the generated URLs. Clean URL for <http://www.example.com/?q=node/83> looks like <http://www.example.com/node/83>. Popular Content Management Systems provide configuration options for clean URLs. For instance, in Wordpress: Go to Settings → Premalinks, in Drupal; Navigate to Administrator → Configuration → Search and Metadata → Clean URLs and check / uncheck Clean URLs checkbox. Apache mod_rewrite function should be enabled in Apache web server.

8.10. SERVER ENVIRONMENT

The recommended the hosting environment implements Demilitarized Zone (DMZ). With a DMZ, the public web server is placed on a LAN segment where all traffic must pass through a firewall. Rules should be created that allow outsiders on the internet to connect to the web server. Also, rules should be created that allow insiders to connect to the web server. Ports restrictions should be applied in the firewall.

Options to create DMZ include having two firewalls with the DMZ subnet between the firewalls. Other option is to use single firewall with three (or more) interfaces.

Server operating system should be the versions that are fully supported either by the OEM vendor or OEM Vendor partner or an active community.

Avoid using any operating system that are released as Technical Review / Beta / Alpha or any pre-release candidates of server operating systems for hosting websites

Server operating systems are adequately protected from virus and malware.

Avoid using packaged web server, database and application server frameworks like XAMP, MAMP, WAMP, etc. These packages are meant for development environment.

Use technology stack that is within the support life. Support can be provided by the OEM vendor or OEM Vendor partner or well-established community to support the technology stack being used.

8.11. DESKTOP DEVELOPMENT ENVIRONMENT

The operating systems in the development environment should be within the support life by the OEM vendor or OEM vendor partner or established support community.

Avoid using any operating system that are released as Technical Review / Beta / Alpha or any pre-release candidates of the operating systems.

Development environment should be protected using adequate security tools like anti-virus, anti-malware, etc.

Use tools and IDE having adequate support and avoid using technical preview or beta release of the tools and IDEs.

9. STRUCTURAL STANDARDS

9.1. LAYOUT AND DESIGN

When designing the website, agencies should sure the primary content or functionality of the page is prominently displayed and is obvious to the user. Content should have strong contrast from decorative elements and images. A clean, modern and professional design should be maintained. While reviewing the modern design trends assess and adopt the trends that is applicable for the purpose and functionality of the website. Design with accessibility and usability in mind.

9.2. WEBSITE HIERARCHY AND STRUCTURE

Agencies should consider the following to design and develop website hierarchy and content management structure:

- i. Establish a clear website content structure. Website structure entails organizing website's content, information flow and category or subject hierarchy in such a way that users can logically move through the website with ease, track their progress and determine their location within the website on any web page by use of breadcrumb. Site Map should be available to assist visitors to navigate the website. Visitors can access the site map and navigate the links to access relevant pages.
- ii. Taking into account consumer expectations and functionality to be delivered, website structure should be either linear layout or hierarchical layout, webbed layout or combination layout.

A linear layout connects web pages in a straight line. A linear layout is appropriate if the information on the web pages should be read in a specific order.

A hierarchical layout connects web pages in a tree-like structure. This layout works well on a site with main index or table of contents page that links to all other Web pages. With this layout, the main index page would display general information and secondary pages include information that is more detailed.

A Webbed web site layout has no fixed structure. This layout works best on web sites with information that does not need to be read in a specific order and with many navigation options that users can select.

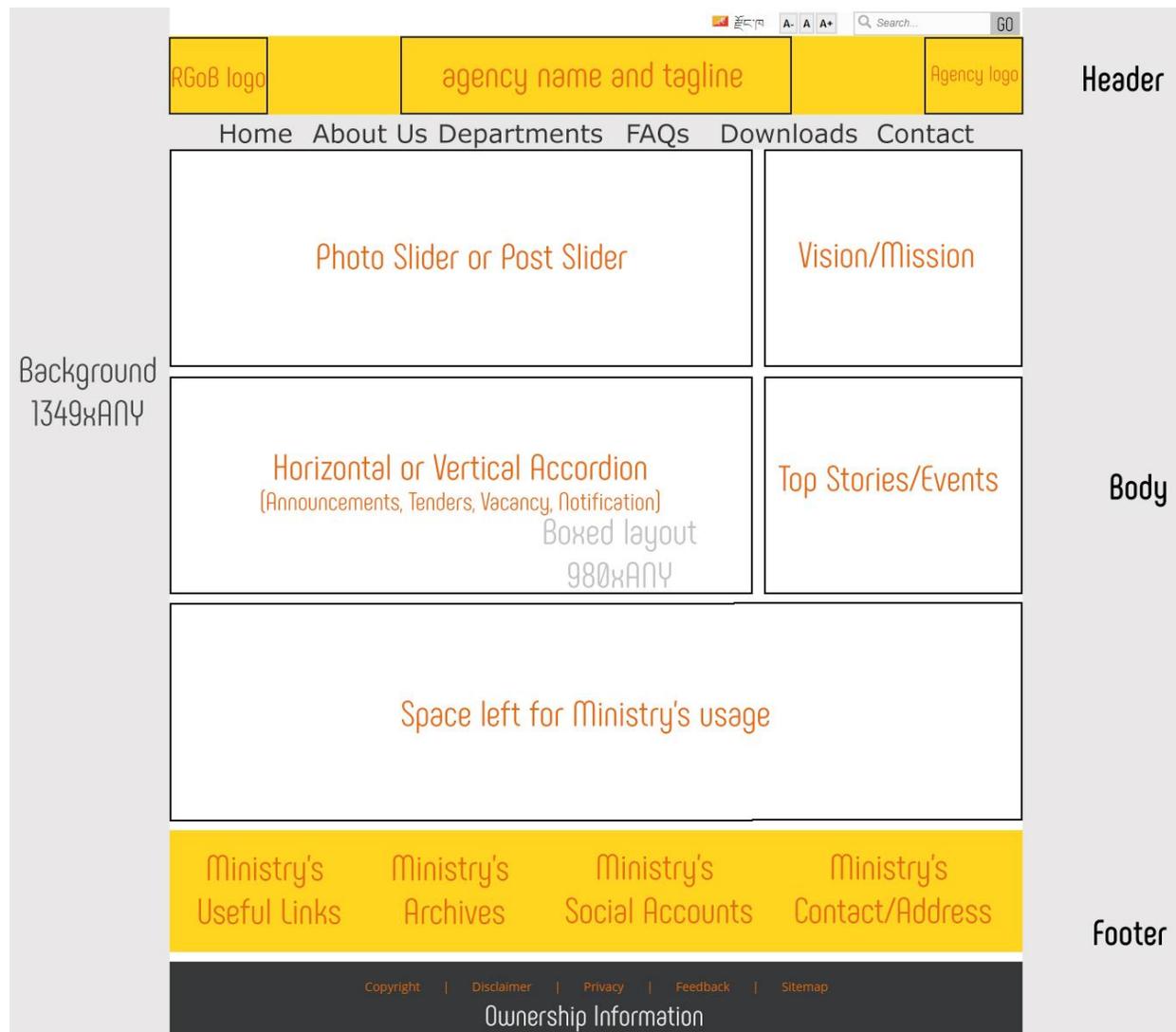
9.3. PAGE LAYOUT

Page layout is a significant consideration in the overall design interface for any website. It is recommended following considerations be taken into account to achieve well laid out web page:

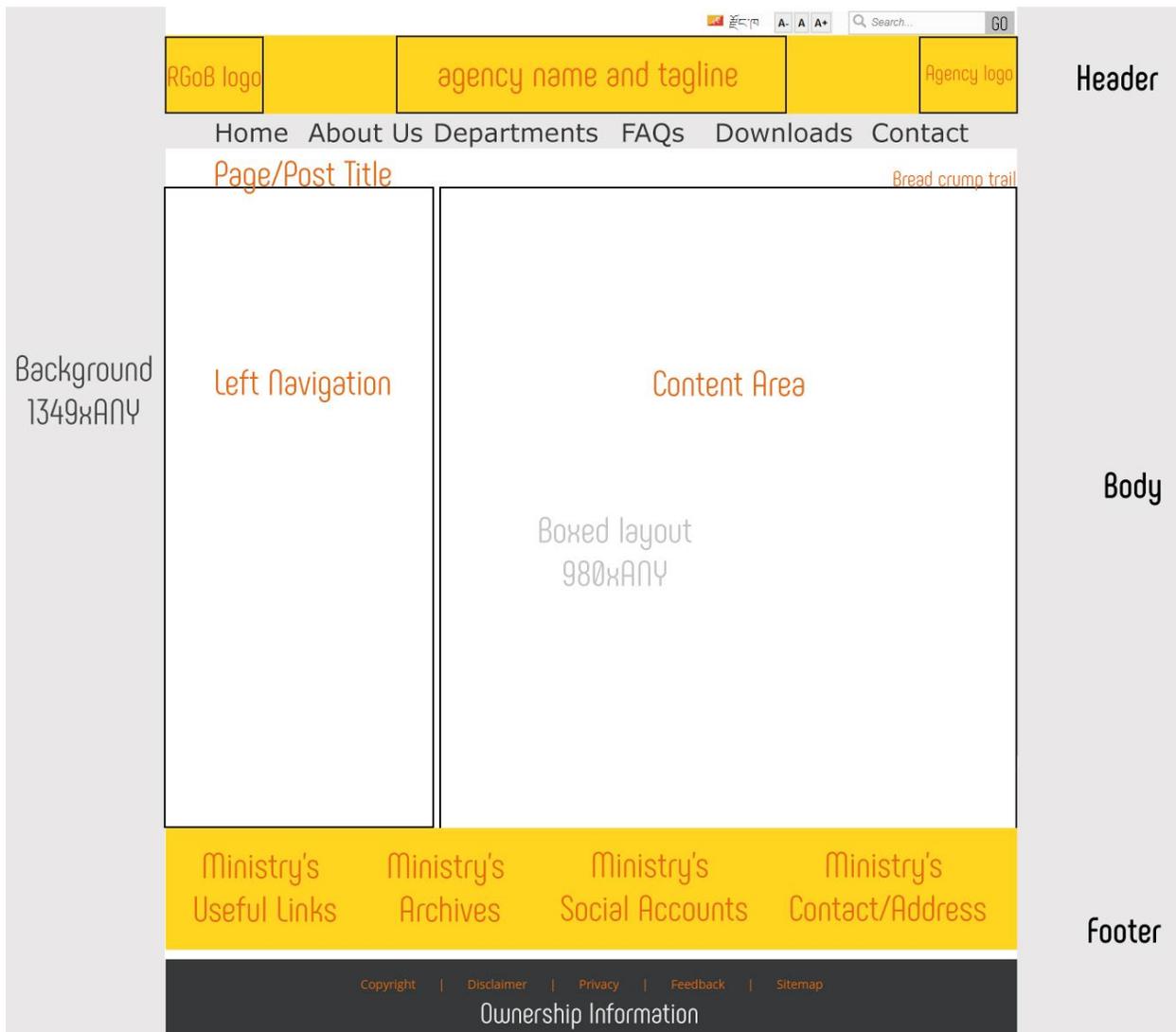
- i. Agencies should endeavor to design pages that are informative, inviting, concise and easy-to-read and organize content using headings

- ii. WebPages provide enough information for visitors to recognize what is being offered, explore further and easily navigate the website. The design should minimize clutter in the form of distracting animations, splash pages, unnecessary graphic elements and blinking or scrolling text
- iii. A consistent page layout should be maintained throughout the site. The placement of navigation and text elements be should be uniform across the website
- iv. Establish proper focus on important elements of the webpage, so that the visitor is guided to those positions, which deserve most attention. These elements should not go inside a scroll.
- v. All information category / components / elements on all the pages should be clearly marked / labelled. This is to be guided by the information architecture where information of one kind is grouped together and presented visually at one point in the page.
- vi. The page layout should comply with provided page template

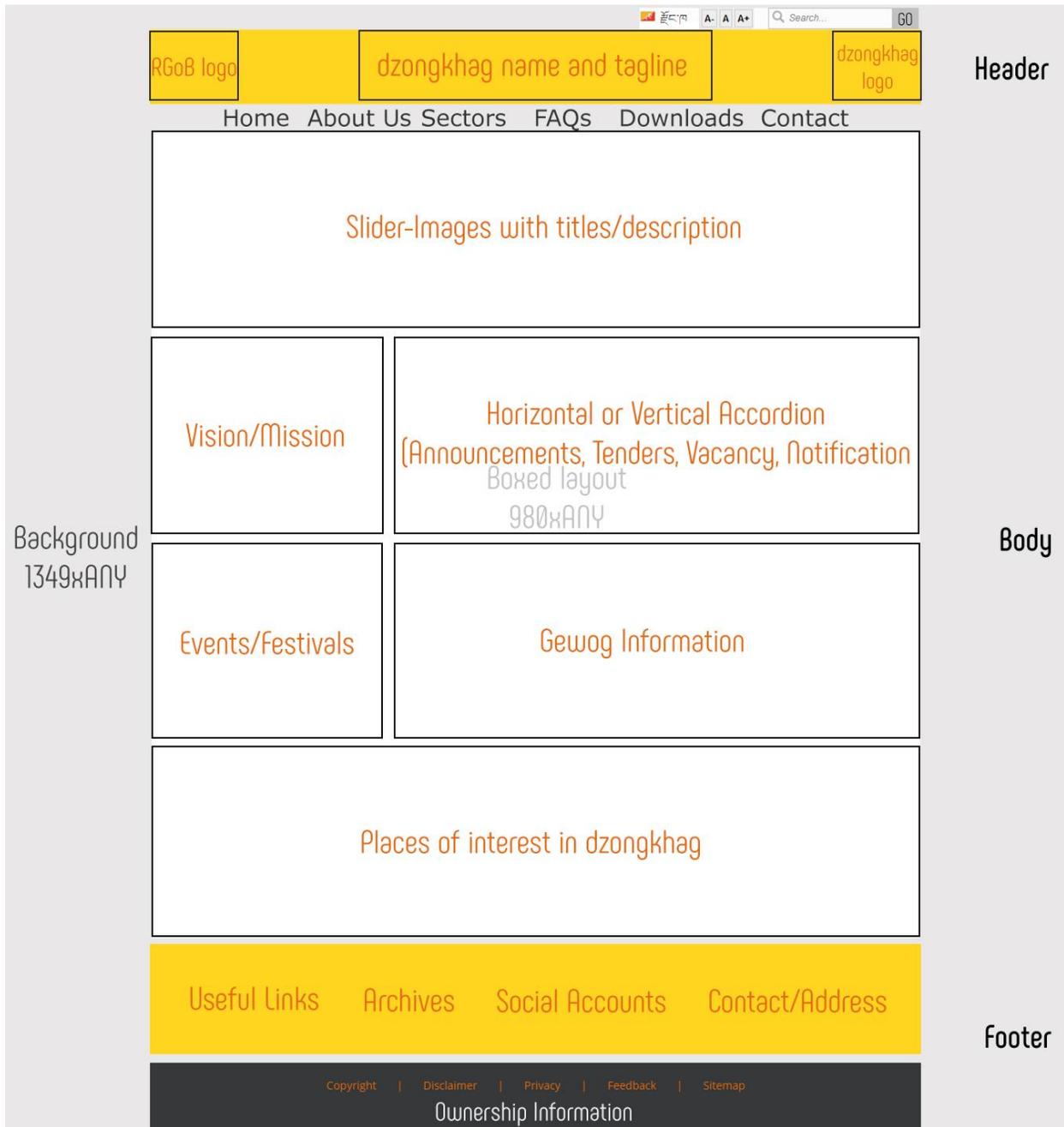
Home Page Reference Layout for Ministries and Departments:



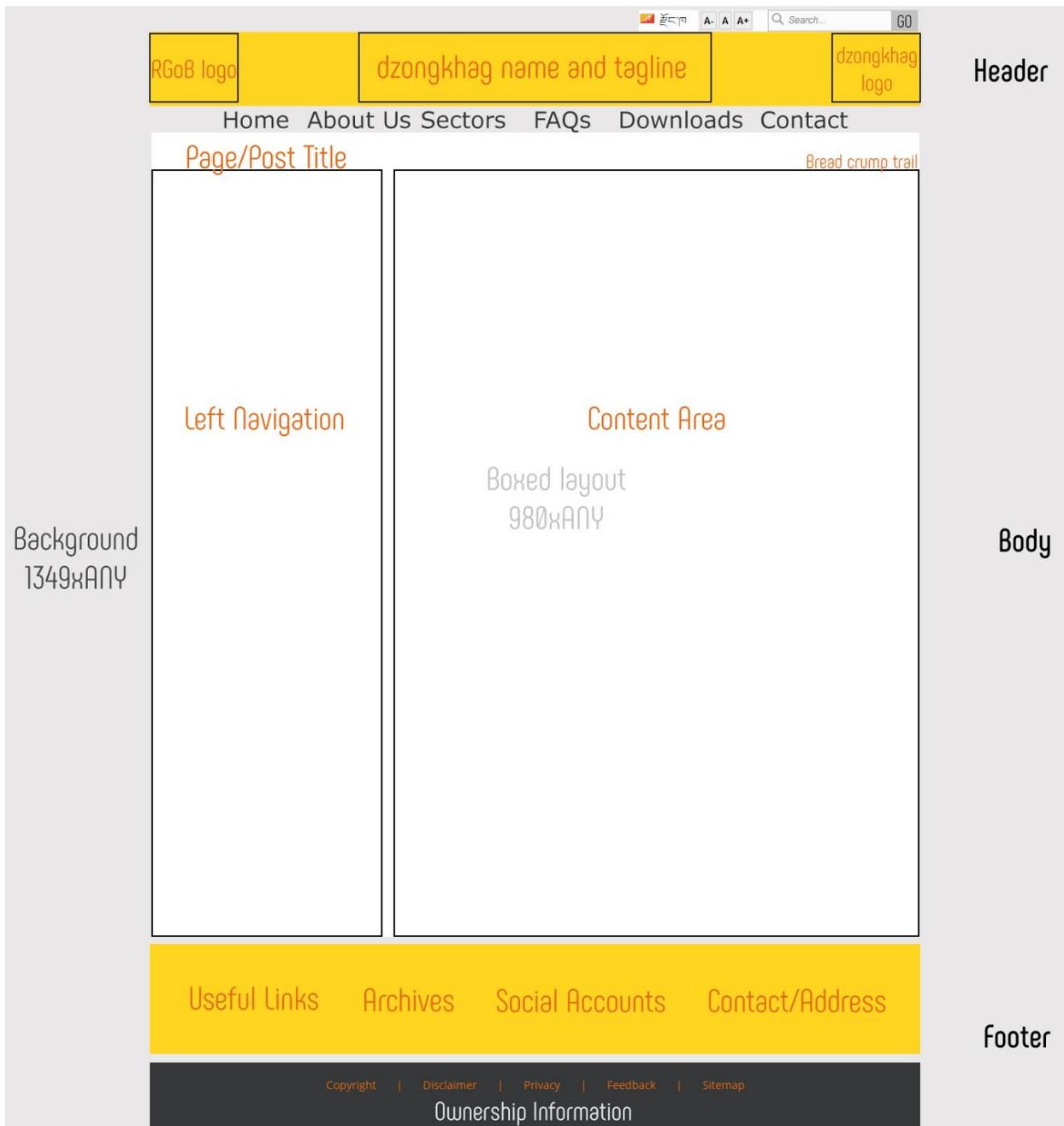
Secondary page Reference for Ministries and Departments:



Home page for Local Governments:



Secondary Page for Local Governments:



9.4. NAVIGATION

Navigation refers to the menus and links which allow visitors to move from one page to another within the website. Consistent Navigation makes it easy to use a website since visitors need not understand or remember different navigation style for different sections. Therefore, to promote ease-of-use for all site visitors, Government websites should have a navigation scheme that is used consistently across the website.

The organization and navigation scheme of the content should be either categorized by subject (topic, task, services, life events), by audience group, by geographic location or combination of all.

It is expected that following is ensured for consistent navigational links:

- i. The navigation system should be insightful to help visitors easily locate information or services
- ii. Links to the home page and the search facility should be provided on every page
- iii. Breadcrumbs should be provided at the top of each page with links to trace back the navigation
- iv. Provide ways to help visitors navigate, find content, and determine where they are by ensuring tab order reflects navigational sequence
- v. Ensure all related content is linked internally within the site wherever needed which allows visitors to find cross-referenced content easily
- vi. The navigation system should be consistent and predictable with Consistent Content terminology and positioning adopted across government websites
- vii. Consistency in nomenclature should be maintained across the website
- viii. Ensure three click principle. Visitor should be able to find the content with maximum of three clicks
- ix. In case of repeated content, the web pages should have mechanisms to bypass blocks of repeated content. This may be done by providing a skip to content link at the top of the webpage
- x. Links to under construction page should be avoided as far as possible

Following is recommended in terms of menu organization:

- i. Consistent top menu with up-to maximum of 3 three drop down sub menus.
- ii. If content architecture requires more than 3 level of menu, then forth level menu should be organized as side bar menu
- iii. Any combination of top and left menu is acceptable as long as ‘three click principle’ is maintained

9.5. SITEMAP

Site visitors visiting government website need to be able to find the information and services they seek, as easily as possible. A site map represents the structure of a website, textually as well as graphically, on a single page. A proper “Site Map” can provide convenient and easy-to-understand view of the contents in the whole site. It also facilitates quick access to the information that the visitors want.

- i. All government websites should have a Site Map link to Homepage as well as all important entry pages of the site
- ii. The sitemap should be universally accessible and should be provided in plain text or hyperlink format
- iii. Website managers / web masters should establish a schedule or process for regular review and update the sitemap.

9.6. IMAGES AND GRAPHICS

9.6.1. GRAPHICS, BUTTONS AND ICONS

Buttons and icons are symbolic representation of objects and the representation of actions that are applied to objects. Icons, if used properly, are powerful techniques for communication and attention. Graphics, buttons and icons are free from the barriers of language.

- i. While using national identity, it should be ensured that the images are in a proper ratio and colour
- ii. The graphic elements like buttons and icons should be simple and their meaning and symbolism should be self-explanatory and relevant
- iii. Buttons and Icons should be of appropriate size to be distinguishable on different resolution screens
- iv. Avoid using graphics to present major content.

9.6.2. GRAPHIC FORMAT AND OPTIMIZATION

Graphics Interchange Format (GIF), Joint Photographic Experts Group (JPEG), and Portable Network Graphics (PNG) formats are acceptable for use on websites. Images and graphics should be optimized for web to keep file sizes relatively small without affecting the image quality. Ensure that the details within the image should remain sharp, and no compression artifacts should be visible. Images and graphics should not be distorted or skewed.

- i. GIF is good format for images with solid flat colours or sharp and distinctive edges, such as text and line art. The gif format allows more control over each individual pixel. This format can be made into a transparent version of the graphic
- ii. PNG offers a variety of transparency options. With true color and grayscale images either a single pixel value can be declared as transparent.
- iii. JPEG format is usually a better file format to be used for photographs. This format gives better control over quality of photo in relationship to compression of the photo

Scalable Vector Graphics (SVG) is acceptable as long as an alternative graphic format is used to support legacy browsers.

Following is recommended for better management of web graphic, images and multimedia content:

- i. Use thumbnails as one of the techniques for displaying large graphics. If this method is used, consider to use full-sized graphics on the printer-friendly version
- ii. Interlace large GIF files to speed up downloads
- iii. Use background images carefully and make sure they are simple and keep image resolutions as low as possible so that the images do not affect download speed
- iv. Optimize the image capacity so that it does not affect page download which may cause unnecessary timeouts
- v. Use of multimedia (video, animation and audio) meaningfully especially when they are intended to convey critical messages to the users / visitors
- vi. Where animations are used, provide prior descriptions before they are displayed and ensure the animations user-controlled by mute, pause and replay or ignore multimedia elements

9.6.3. COPYRIGHTED IMAGES

Copyright images and trademarks should be used with the consent of the copyright owner or in accordance with the copyright license. Refer Copyright section for details.

9.6.4. ALTERNATIVE TEXT OR DESCRIPTION

Images should always contain alternative text equivalents. The text should describe the image as it is presented visually. The alternative text should not contain any additional information that cannot be determined in context. Alternative text is associated with an image by using the *alt attribute* which should be always included. If the image is used purely for aesthetic and no information is to be conveyed through the image then the alt attribute value should be empty string.

9.6.5. GRAPHICAL TEXT

Images of text should be only used for aesthetics or when the visual representation of the text is essential. If images of text are used, the text alternative should contain the same word as the image.

9.6.6. INFOGRAPHICS

An infographic is a picture, image, chart or diagram utilizing a combination of images and text to convey information or data in a visual way. Use of infographics should comply with the accessibility standards and alternative text must be used as per the alternative text usage requirement (refer 9.6.4). A text equivalent of the information the infographics is conveying must accompany the image, or there should be a link provided with the image to take a site visitor to the text version.

9.7. LANGUAGE AND TEXT

9.7.1. PAGE TITLE

Pages should have a title that is clear and concise yet descriptive if the topic or purpose of the page. Avoid using same title for all pages. A common title, such as the site name, could be appended to the end of the page title.

9.7.2. CONTENT LANGUAGE

Assess the audience and use language based on the target audience. As the government websites are meant for general citizens, avoid use of jargons and technical language. If use of jargons and technical language cannot be avoided, provide appropriate definition for the terms used.

The website content should be minimum bilingual supporting Dzongkha and English. Agencies can use either English or Dzongkha as default language for the website with clear information on how to change the content language.

9.7.3. HEADINGS

Heading should always be used and be concise yet descriptive of the content block. The heading should stand on its own. It is recommended that the headings should not exceed 60 characters.

Use the heading levels properly. For example, all sub-sections below <h1> should be <h2>. All sub-sections below <h2> should be <h3>, and so forth. The main content section of a web page should start with heading level 1 <h1>.

Consistent heading style should be maintained across the site. For example, the level and font for main heading should be same across the site. Similarly, other headings should be same level and font.

9.7.4. CLEAR TEXT

Text should be clear and easy to read with good contrast and adequate spacing between lines, paragraphs, and content sections. Do not use overly long lines which would require horizontal scroll to read the complete content. A minimum contrast ratio of 4.5:1 between text and background should be maintained.

Resource for Reference:

- i. WebAIM: Color Contrast Checker (<http://webaim.org/resources/contrastchecker/>)

9.7.5. TYPOGRAPHY

The content of the website should be readable with default standard fonts.

- i. Fonts used should be standard agency fonts with a minimum size of 12 points or 16 pixels. Relative font sizes and measurement should be used. Text should be resizable up to 200 % without loss of content or functionality.
- ii. When using Dzongkha language fonts, web page should be tested on major browsers for any inconsistency (loss of layout, rendering and font size);
- iii. Except for captions and images of text, it should be possible to resize the text without assistive technologies without loss of content or functionality. Minimum of three options to resize text should be available on all pages of the website.
- iv. Font properties should be such that the text should be readable in both electronic and print format and the page should print correctly on an A4 size paper.

9.7.6. TEXT ON IMAGES

Whether graphical text is part of an image or text is an overlay on top on an image the background for the text should be a single opaque colour. A minimum contrast ratio of 4.5:1 should be maintained.

If the text is an overlay, avoid relying on the image for the background colour. If images are turned off, then the text will not be visible against the page background.

If the text is part of the image, the text alternative should contain the same words as in the image.

Text or any other elements should not cover the focal point of the image.

Text on images, buttons and other elements should be consistent with the overall content in the site.

9.8. HYPERLINKS

9.8.1. LINK APPEARANCE

Links should be obvious and stand out from other text. All textual links inside the web content should be of different colour (ideally blue) than the normal content.

9.8.2. DESCRIPTIVE LINK TEXT

All links should be meaningful so that the purpose of the link can be understood from the link text alone. Avoid situation that require site visitors to rely on context surrounding the link to determine the purpose of the link. Avoid multiple click options. If more than one links to point to same web address or serve the same purpose then the link

text should be same. Never use same link text for links that point to different web addresses or serve different purpose.

9.8.3. LINK OPEN OPTION

Links to other domain sites should open in new window / new browser tab. Information about link option like “opens in new window / browser tab” should be clearly visible to the site visitor in the link text.

9.8.4. LINKS TO DOCUMENT OR APPLICATION FILES

If link that will open a document format or application that requires a plugin, viewer, or opens in an application other than the browser, the document or application type should be clearly indicated in the link text or an icon could be placed adjacent to the link that denotes the same intention.

If the required plugin or application is not installed then the file should be downloaded. If the plugin or application is installed then the document or application should be opened in new window / browser tab.

Ensure file size is kept to minimum. The site visitors should be notified if a large file could potentially cause delay in response or load time. For any file size greater than 2 MB, large file information should be provided. Also include the size of file in the link text.

9.9. FORMS

9.9.1. LABELS AND FIELDSETS

All form fields should be labels. All labels should be related to their control using “for” attribute. The labels should be clear, descriptive and unique. Instructions or hints, such as mandatory / optional, data format, etc. should be included on the label text.

Related form field should be grouped using field sets. Legend text should be clear, descriptive, and unique.

9.9.2. ERRORS

Errors or suggestions should be automatically detected, the items in error should be identified, and the error or suggestion should be described to the user in text. All the errors should provide custom error message. Avoid use of system generated or errors picked from log files. Error messages should be descriptive using natural language and precise exact problem.

Error message should be informative enough so that site visitors can fix problems and to understand the situation so they can avoid making the same mistakes.

Client-side validation should be included wherever applicable. For example, validation for email to contain @ and .bt / .com /.org etc. should be validated at client site using relevant technologies like JavaScript. Mandatory data requirement should be validated using JavaScript or equivalent technology.

9.9.3. CAPTCHA

CAPTCHAs (Completely Automated Public Turing test to tell Computers and Human Apart) should be used in forms to make sure that the entity filling out the form is a human being rather than a computer program that was written to submit the form many times.

The CAPTCHA provision should cater to all audience groups like visitors with different disabilities.

Do not use CAPTCHA is user is already logged in.

9.10. TABLES

Use table to display tabular data rather than as a layout tool. When using table to display tabular data, table headers should be used to associate the data with the column and / or row titles. Use of tables mixes presentational data and the content making the file sizes large. Table based pages are less accessible to users with disabilities and viewers using smaller screens.

Tables are less friendly to search technologies and assistive technologies used by the people with disabilities. Hence, HTML 5 specification recommends against tables for layout and HTML 4.01 disallows use of tables as layout tool.

A table summary should be used to describe the table structure and its purpose. A table caption may be used in conjunction with summary.

9.11. COLOURS AND BACKGROUNDS

To make colour choices the website developers should consider the following:

- i. There should be adequate contrast between text and background. Using combinations like red text on blue background makes the text unreadable
- ii. Use of colour should depend on the type of audience. For example, a site for children may use bigger fonts and bright colours to grab attention of kids while a site designed for researchers and academicians should focus on content with subtle use of colours.
- iii. Stick to conventional colours that reflect professionalism and style
- iv. Use a colour scheme which is in-line with agency image
- v. Use colours that match the colours in the agency official logo
- vi. Utilize a uniform color theme throughout the whole website
- vii. Avoid textured backgrounds as they blur the clarity of screen text and increase download sizes
- viii. Websites should ensure the colours used for text and graphics look good on a variety of platforms, monitors and devices by selecting them from the 216 – colour web-safe palette
- ix. Don't use colour combination which clash with one another such as red and green
- x. Use colour that enhance the readability of screen text
- xi. All information conveyed in colour should be available without colour as well

9.12. SITE SEARCH

Search is a standard facility on any website as visitors expect to be guided to the desired information and service through an easy to use search facility. Effective search functionality is crucial for mining through the large volumes of information available on Government websites.

- i. All government websites should include either a “Search” box or a link titled “Search”. The search box / search link must be placed in the same position on all pages.

- ii. Search results should be displayed in an easy-to-read format. The terms search should be highlighted in each of the search result
- iii. Departments should carefully determine the scope of its search index to determine which content should be included and which content should be excluded.
- iv. It is recommended to have option for more refined, focused search called the “Advanced Search” to achieve more relevant search results
- v. In case the search results reflect the results from outside the website, it should be clearly distinguished and mentioned appropriately

10. WEBSITE DESIGN AND CONTENT MANAGEMENT

- i. Government websites should be developed in a precise, concise and objective manner. To ensure content is suitable for the web, following principles should be considered:
 - a. Be concise -- highlighting only key aspects and provide links to the original content
 - b. Write for scanability -- site visitors need not read long continuous blocks of text. Use internal links to split up long text into multiple pages
 - c. Use Plain language -- avoid hyped promotional writing, departmental jargon or bureaucratic language
 - d. Bilingual -- at the minimum all the government websites should have provision for English and Dzongkha content. Other languages are optional
 - e. List like search results should be presented with pagination
- ii. Government websites should be developed using a stable content management system (CMS). The CMS shall be used to ensure proper and easy management of web content. Any one of the following CMS can be used to develop and publish websites:
 - a. WordPress
 - b. Joomla
 - c. Drupal
 - d. Liferay Portal Framework
 - e. Custom Developed Content Management Tool
 - f. Any other CMS

The Content Management System should provide, but not limited to, the following functional features:

- i. Every content in the website will have to be managed using Comprehensive content management system which is based on ‘What You Type Is What You See’ approach. Any designated content manager should be able to update content without having to learn programming.

Feature	Description
Rich Text Editor	The RTE will allow the content managers to update content in very user-friendly manner without having to know programming languages. It will provide features for content beautification through font adjustment, colour and portal themes, insertion of pictures in the content, etc.
Website Menu Management	The CMS will allow creation, modification and deletion of portal menu and related content in the menu.
Keywords Tagging	The CMS will provide provision for key words tagging for content in the portal.

- assistive technology to access the content. Use of assistive technology should be able to understand the structure and relationship. This approach is termed as ‘programmatically determined’.
- iii. When the sequence in which content is presented affects its meaning, assistive technology should be able to identify the sequence. This is useful for site visitors with disabilities.

11.2. CONTENT CHARACTERISTICS

Agencies should ensure that the web content has the following characteristics:

- i. Presentability – Consider the characteristics of created content / documents and how to best present the content. Downloadable versions are recommended for lengthy documents. For PDF files, provide link to the latest Document Reader
- ii. Authenticity – Each content document posted in website should contain the following, but not limited to:
 - a. Status of the content document, where applicable. Status of documents can be draft, under review, available for public consultation, adopted document, etc.
 - b. Author and date
 - c. Version and location of the original publication, wherever applicable
 - d. Contact details and feedback mechanism
- iii. Adaptability – Create content that can be presented in different ways without losing information or structure
- iv. Usability and Relevancy – Web content should be simple and well organized and should be meaningful to the target audience
- v. Distinguishability – content should be easier for users to see and hear including separating foreground from background. Refer Accessibility guidelines for details.
- vi. Well Written – Content should be grammatically error free and spelling error free
- vii. Robustness – Web content should be robust enough that it can be interpreted reliably by a wide variety of user agents, including assistive technologies

11.3. WEB CONTENT DEVELOPMENT

Presentation of content should seek to limit each page to one concept as well as provide information based on the six principles of journalism: who, what, when, where, why and how and ensure that the content is written in a style suitable for the web.

Consider the following during web content development:

- i. Agencies should ensure that the homepages, major entry points and navigational elements in the website are written in clear and simple language appropriate for the site content
- ii. As there are diverse target audiences with diverse demographic profiles as well as educational background. It is highly desirable that the language used for developing web content is easily and correctly understood by all sections of the audiences
- iii. Prepare the content in Dzongkha and translate in English or vice versa. Based on the provision in the content management system upload the content in both languages
- iv. To develop web content, the content owners should use short and concise sentences which are simple to understand and comprehend.
- v. Agencies should ensure that, web content is free from grammatical errors / spelling errors. It is important that quality assurance is conducted for all web content prior to posting onto the website
- vi. Avoid use of acronyms and abbreviations. If used full forms should also be provided

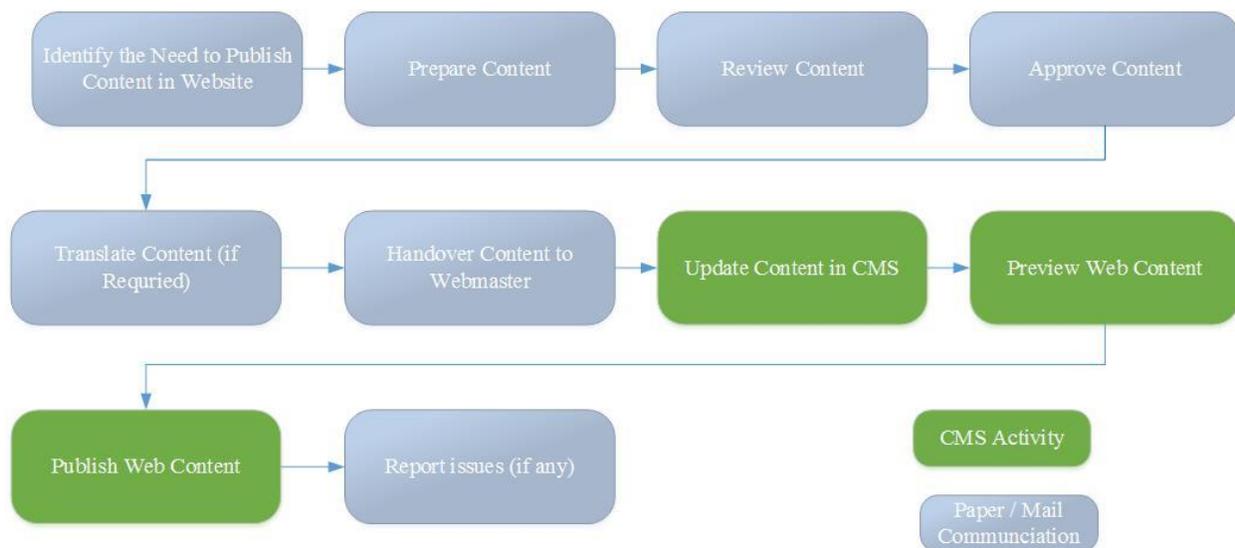
11.4. MANAGEMENT OF WEB CONTENT

Content is key to every website. Agencies should therefore continuously endeavor to create web content that reflect relevancy and currency. Content management is a mix of business practices and technical processes for authoring and collecting information for website, keeping it current and publishing it.

Agencies should ensure following for proper management of website content:

- i. **Continuous Review:** There should be an established review and refresh process to ensure content is up-to-date, relevant, consistent, authentic and unambiguous. Some content may need updating daily or weekly, whilst other areas may need less frequent review
- ii. **Breach of Copyright:** Agencies need to be aware of the potential for copyright breaches arising from unauthorized use of material
- iii. **Allocate Functions:** In the content management process, define functions such as content author, reviewer, and publisher. It is important all the required functions are addressed
- iv. **Monitor for usage of copy righted materials in the website.** If copyrighted content is used seek required consensus from the content owner. Refer Copyright for details.
- v. **Approval and Publishing Process:** Agencies should have some formal process for content review, authorization, preview and publishing with appropriate workflow between the phases.
- vi. **Version control:** Ensure that content is version-controlled to avoid confusion to the site visitors.
- vii. **Backup and Archival --** Periodic backups of the past few versions should be archived for a reasonable timeframe. Refer Archival for the details regarding archival guidelines.

Management of web content should be as per the process depicted in the following figure.



Sl. No	Activity	Role
1	Identify the need to publish content in website	Representatives from departments / divisions / units / sections. Head of the agency / representative of head should review the need and approve.
2	Prepare content – Content Owner	Representatives from departments / divisions / units / sections.
3	Review Content	Head of the agency / representative of head should review the need and approve. Media / Communication Focal

4	Approve Content	Head of the agency / representative of head should review the need and approve. Media / Communication Focal
5	Translate Content	Dzongkha Coordinator
6	Handover Content to Webmaster	Media / Communication Focal Person or Head of ICT officer
7	Update Web Content	Web master
8	Preview Web Content	Web Master or / and Head of ICT Office
9	Publish Content	Web Master
10	Report issues (if any)	Representatives from departments / divisions / units / sections.

12. WEBSITE MANAGEMENT

Agencies should consider the following for management of website:

- i. Agencies should ensure that delivering information and services on the internet is managed with the same level of quality and commitment as that employed when delivering information and services using conventional methods
- ii. The management of online information and services in any agency requires establishment of a website management committee, with representation from all key departments / divisions / sections / units, and a webmaster. The committee is required to develop and oversee implementation of a website management strategy
- iii. DITT or relevant office should ensure conformity to the standards by constituting a web management team

13. WEBSITE MANAGEMENT COMMITTEE

Typically, website management committee comprises of:

- i. Head of Directorate Services / Autonomous Agency (Dasho Dzongda for dzongkhags and Executive Secretary for Thromdes)
- ii. Head of ICT Office
- iii. Head of Communication (if any)
- iv. Representatives from offices (departments)
- v. Legal Officer
- vi. Dzongkha Focal Person

The Website Management Committee is mandated to:

- i. Ensure that websites are developed and maintained according to the standards
- ii. Ensure that the website is positioned as one of the communication and service delivery tool
- iii. Collate and validate web content
- iv. Identify and recommend the resources and support requirements to ensure effective website performance
- v. Ensure that developed online systems are linked to the website so as to maximize access, effectiveness and ease of use
- vi. Undertake periodic web content reviews to ensure the integrity, reliability, accuracy, currency, consistency and completeness of the content

- i. Understand the website content requirement from the respective departments / divisions / units
- ii. Prepare the content in consultation with co-workers and get approved from head of the respective agency
- iii. Forward the content to Dzongkha Focal Person for review and translation
- iv. Forward the approved content to the Head of Communication (if any) for review and approval to publish in the website
- v. Review the published content and report to webmaster in case of discrepancies / errors / mistakes
- vi. Provide corrected content (of those content with discrepancies / errors / mistakes) to web master for publication
- vii. Maintain the records of content published on the website that is owned by the respective department / division / unit / section

Legal Officer–The legal officer is responsible for legal aspect of the website:

- i. Formulate, review and update privacy policy
- ii. Formulate, review and update website / content ownership / copyright statements
- iii. Formulate, review and update usage policy / Terms and Conditions for the information published in the website
- iv. Formulate, review and update the disclaimer statement
- v. Represent the agency on cases related to violation of any of the legal aspects of the website

Dzongkha Focal Person – The Dzongkha Person is responsible for preparing content in Dzongkha.

- i. Attend to translation request for content
- ii. Review and modify translated content
- iii. Review published web content and report to web master in case of inconsistencies / errors / mistakes
- iv. Provide corrected content (of those content with discrepancies / errors / mistakes) to web master for publication
- v. Maintain record of translations and review of web content

14. GOVERNMENT WEB MANAGEMENT TEAM

DITT / MoIC shall establish a Web Management team consisting of Webmasters, Architects, Information Experts, Security Experts, Application Developers and Database Administrators for Whole of Government. This team has responsibility to ensure that all government website adhere to set web standards.

The team should also:

- i. Ensure that all government websites are developed on a common and secure CMS platform
- ii. Manage and maintain the gov.bt portal
- iii. Conduct periodic assessment and audit of government websites and provide feedback for improvement
- iv. Liaise with government agencies to produce and improve gov.bt portal
- v. Review and update web standards, guidelines, reports and plans related to government websites
- vi. Conduct quality control of the government websites, and as necessary recommend to agencies the use of most current web technologies to adopt to changing requirement, and create awareness
- vii. The team shall be responsible for evaluation of national website competition
- viii. Conduct periodic website audits for accessibility, relevance, and usability of all government websites and produce audit reports accordingly

15. WEBSITE MANAGEMENT STRATEGY

All government agencies should have website management strategy. The website management strategy should include and timelines, as well as the development and regular review of the website and all plans associated with the website. The Website management strategy comprises of:

- i. **Objective of the strategy** – The objective of the web management strategy as what is intended to be achieved by developing / maintaining the website for the agency;
- ii. **Online service plan** – Online service plan should comprise of plan to use agency website for providing services; informational services and transactional services;
- iii. **Financial Plan** – Financial plan should specify the budgetary plan to achieve online service plan and website hosting plan;
- iv. Information management plan to include content maintenance, timely updating and decommissioning of websites. Describe the situation leading to website decommissioning.
- v. **Electronic records management and archival plan** – This plan relates to management of records of information published online, backup management, archival process and how to provide access to the archived content;
- vi. **Monitoring and Evaluation Plan**–Plan for website monitoring to ensure availability. How the website is going to be evaluate for relevance? Some approaches are internal assessment using website analytics, online polls and surveys, etc.;
- vii. Website security plan – Activities to ensure website and content security;
- viii. Hosting plan – Hosting infrastructure, contingency activities should be described.

16. THE WEBMASTER

Agency should appoint a webmaster who is responsible to update web content on a regular basis with the approval of the media officer. Webmaster is responsible for:

- i. Design creative, cost effective solutions for websites
- ii. Designing and publishing web pages
- iii. Provide alternative designs and information on techniques of production, website specifications, graphic content and media requirements
- iv. Maintain, modify and update existing website. Keep website current, coordinate with other members of website management committee to determine content requirement, content sources and compile information to update the website
- v. Oversee and assist in website design, editing, and developing website and content for the website
- vi. Identify, evaluate and solve website problems
- vii. Test and evaluate web pages for accuracy and functionality
- viii. Installation of web software (s)
- ix. Website configuration and bug fixes
- x. Website traffic monitoring
- xi. Web security enforcement
- xii. Analyze Server log Files
- xiii. Produce regular report Web Statistics, Analytics, Traffic Statistics, Error Reports, etc.
- xiv. Improve website based on the assessment results
- xv. Conduct self-assessment to ensure compliance to the standards

- xvi. Maintain regular backup of the website
- xvii. Report any security issues to BtCIRT
- xviii. Propose for website enhancement / maintenance and seek approval from the web management committee
- xix. Maintain and manage all documentations related to the website
- xx. Ensure 99 % availability of the website
- xxi. Conduct surveys and polls on a regular basis to enable continuous improvement of the website. The research shall seek to determine:
 - a. Usefulness of information resources and services offered on the website
 - b. New information resources and services to be provided
 - c. Identification of web pages and online services that is slow to load
 - d. Ease of locating required information and services
 - e. Accessibility and usability
 - f. Suggested improvements
 - g. Statistics

17. VISITOR FEEDBACK

Effectiveness of agency also depends on the effective use of website. Feedback can help in determining website relevance, usefulness, currency of information and quality. All problems and consumer queries shall be attended to in a timely and professional manner.

Web Master / Officer(s) should be deputed to:

- i. Review reported compliments, comments, problems and queries
- ii. Forward them to the appropriate office in the respective authority for action
- iii. Monitor timelines for corrective action
- iv. Respond to the visitors within defined timeframes

18. DOCUMENTATION

Agencies should produce and maintain documentation of the development processes, administration and maintenance of the website including internet applications and database for continuity.

Common preserved documentation on websites are:

- i. Website Assessment Report
- ii. Website Requirement Business Case
- iii. Information Architecture
- iv. Approved Layout Documentation
- v. Test Cases and Test Results
- vi. Content Management Systems Documentation
- vii. Content Management Manual
- viii. CMS ACP documentation

- ix. Website Analytics Reports
- x. Website Update logs
- xi. Security vulnerability assessment reports
- xii. Website vulnerability remediation reports
- xiii. Website standards compliance reports

19. DECOMMISSIONING WEBSITE

- i. Website of all government website should be regularly reviewed to ensure that they are relevant and up-to-date. Any website could be retired or decommissioned when:
 - a. The website ceases to serve specific function or purpose government agency;
 - b. Has been rendered irrelevant due to re-organization of government;
 - c. Was developed for a particular project or strategy that is no longer relevant or current;
 - d. Was launched as part of a government sponsored campaign that has since come to an end;
 - e. Is non-essential and website traffic statistics reveal that the website is not being utilized and there are no plans to revamp / redesign the website.
- ii. When decommissioning a website, consideration should be given to archiving the content as appropriate;
- iii. After decommissioning of the website, domain should be de-registered as well;
- iv. Website can be forcefully decommissioned if the website becomes channel affecting the identity and image of Royal Government of Bhutan, is used for illegal activities, and is detected as channel of concern for national security.

20. ARCHIVAL MANAGEMENT

Government websites are storehouse of huge volume of agency information and documents which are of relevance and importance to the agency as well as the site visitors. The content can be referenced for legal, regulatory, academic and research purposes. Hence, it is important to maintain online archival and subsequently offline archival.

The preservation and access to web content shall be planned so as to ensure availability and access throughout the life of the content. Agencies should consider the following for archival management:

- i. Maintain the archival of the content as per agency policy with proper records management
- ii. Provide online access to archived content in relevant format
- iii. Identification of records that exist in the website and those that need to be archived
- iv. Ensure that full and accurate records of web content are captured and maintained for as long as they are required

21. WEBSITE MONITORING

Web being a dynamic medium, changes in terms of technologies, access devices and event the requirements and expectation level of visitors. Hence, all government websites should have a website monitoring policy. Websites should be monitored regularly in accordance with the plan to address and fix the quality and compatibility issues around, but not limited to, the following aspects:

- i. Performance – Site download time should be optimized for a variety of network connection as well as devices. All important pages of the website should be tested for performance;
- ii. Functionality – All modules of the website should be tested for their functionality. Moreover, interactive components such as feedback forms should be working smoothly;
- iii. Broken Links – The website should be thoroughly reviewed to ensure no broken links exist;
- iv. Traffic Analysis – The website traffic should be regularly monitored to analyze the usage pattern. Use Web analytics tools to analyze the traffic;
- v. Feedback –Feedback from the visitors is the best way to judge a website’s performance and make necessary improvements. A proper mechanism for feedback analysis should be formulated to incorporate the feedbacks and suggestions from visitors.

22. BACKUP MANAGEMENT

It is very difficult to clean a website after a compromise, especially when there are no original files available. As a contingency effective backup mechanism will save lot of time to restore the websites. Following consideration should be made while managing the website backups:

- i. Maintain a baseline or full website backup of everything from a know good point. The baseline backup should be clean. The best time to create a baseline backup is after provisioning a new website. If enhancement is planned baselines of before starting the enhancement a backup should be created.
- ii. Avoid situations to replace the baseline backup. If replacement is done care must be taken to ensure the new baseline backup us clean. Establish a new baseline every time a major milestone.
- iii. Keep archive of the older baselines.
- iv. Between baselines do incremental backups. Incremental backups should be created as and when there is update in the website content. Other periodic incremental backups (weekly) are required to capture the information submitted by the site visitors.
- v. Ensure that the website backups are kept in multiple safe locations. It is recommended that backup be maintained in three locations:
 - a. System in local network of the hosting premises. This could be any storage within the agency network or hosting service provider network.
 - b. A copy of the backup should be maintained in remote location other than the hosting premise network like data centers (GDC or any other data center).
 - c. A copy should be maintained in detachable storage which is procured and kept for managing website backups. This storage should not be used for any other purpose.
- vi. Practice Restoring – This to prepare the web master to be able to restore the website during event of compromise

23. PRIVACY

Every government website should have privacy policy statement that clearly mentions how the agency respects and protects privacy of site visitors. The main objectives of privacy statement are to inform visitor about what information is collected on the site, how the collected information is used and how the information disclosure is managed. The statement should provide commitment to the visitors that the agency understands privacy concerns.

With regards to privacy, government agencies maintaining existing websites and intending to develop new websites should consider the following:

- i. Government website should include a standard privacy policy statement that enumerates information collected about individuals when they visit the website, how it is used and if it is disclosed. It is important that agencies comply with the undertakings and representations in its website privacy statement.
- ii. Where the agency solicits or collect information from users through electronic forms or email, the agency should ensure that this information is securely transmitted and stored by taking appropriate measures such as data encryption.
- iii. Where the agency needs to transmit information to users, the agency should ensure that the information is protected through appropriate technologies. Reasonable care should be taken to protect the personal information held by any agency from misuse, loss and unauthorized access, modification or disclosure.
- iv. Privacy statement should also clarify whether any cookies should be transferred onto the visitor's system during the process and what shall be the purpose of using cookies.

Sample Privacy Statement if the website collects some personal information

Thanks for visiting website of (Name of the Agency), and reviewing our privacy policy.

We collect no personal information, like names or addresses, when you visit our website. If you choose to provide such information to us, it is only used to fulfil your request for information.

We do collect some technical information when you visit to make your visit seamless. The section below explains how we handle and collect technical information when you visit our website.

Information Collected and stored automatically

When you browse, read pages, or download content on this website, we automatically gather and store certain technical information about your visit. This information never identifies who you are. The information we collect and store about your visit is listed below:

- The Internet domain of your service provider and IP address from which you access our website
- The type of browser used to access our website
- The date and time when you accessed our site
- The pages / URLs / URIs you have visited
- If you reached this website from another website, the address of that refereeing website

This information is only used to help us to make the site more useful for you. With this data we learn about the number of visitors to our site and the types of technology our visitors use. We never track or record information about individuals and their visits

Cookies

When you visit some websites, they may download small pieces of software on your computer

/ browsing devices known as cookies. Some cookies collect personal information to recognize your computer in the future. We use only non-persistent cookies or “per-session cookies”.

Per-session cookies server technical purposes, like providing seamless navigation through the website. These cookies do not collect personal information on visitors and they are deleted as soon as you leave our site. The cookies do not permanently record data and they are not stored on your computer hardware. The cookies are stored in memory and are only available during an active browser session. Once you close your browser, the cookies disappear.

If you send us personal information

We do not collect personal information for any purpose other than to respond to your queries. If you choose to provide us with personal information – like filling out Feedback form, with name and e-mail address submitting to us through the website – we use that information to respond to your message and to help you get the information you have requested. We only share the information you give us with another Government agency of your question relates to another agency, or otherwise required by law.

Our website never collects information or creates individual profiles for commercial marketing. While you must provide an email for personalized response to any incoming questions or comments to us, we recommend that you do not include any other personal information other than Name and email address.

Sample Privacy Statement if the website does not collect any personal information

As a general rule, this website does not collect Personal Information about you when you visit the site. You can generally visit the site without revealing Personal Information, unless you choose to provide such information.

Site Visit Data

This website records your visit and log the following information for statistical purpose – your server’s address, the name of the top level domain from which you access the internet, the type of browser you use, the data and time you access the site, the pages you have accessed and the documents downloaded and the previous internet address from which you linked directly to the site.

We will not identify users or their browsing activities, except when a law enforcement agency may exercise a warrant to inspect the service provider’s logs.

Cookies

A cookie is a piece of software code that an internet website sends to your browser when you access information at the site. This site does not use cookie.

Email Management

Your email address will only be recorded if you choose to send a message. It will only be used for the purpose for which you have provided it and will not be added to a mailing list. Your email address will not be used for any other purpose, and will not be disclosed, without your consent.

Collection of Personal Information:

If you are asked for any other Personal Information you will be informed about how it will be used if you choose to give it. If at any time you believe the principles referred to in this privacy statement have not been followed, or have any other comments on these principles, please notify the webmaster through Contact Us page.

Note: The use of the term “Personal Information” in this privacy statement refers to any information from which your identity is apparent or can be reasonably ascertained.

24. CONTENT COPYRIGHT

Copyright is a form of protection provided under the law to the owners of “original works of authorship” in any form of media. It is implied that the original information put up on the website by Government agency is by default a copyright of the owner agency and may be copied, reported, republished, updated, posted, transmitted or distributed only if the copy right policy of the concerned agency allows so.

Following considerations are recommended:

- i. Any information, material and documents made available on government agency website should be backed up with proper copyright policy explaining the terms and conditions of their usage and reference by others

In cases where the document is in public domain and there is no restriction on its reproduction, the copyright

“Material featured in this site may be reproduced free of charge in any format or media without requiring specific permission. This is subject to the material being reproduced accurately and not being used in a derogatory manner or in a misleading context. Where the material is being published or issued to others, the source should be prominently acknowledged. However, the permission to reproduce this material does not extent to any material on this site, which is explicitly identified as being the copyright of a third party. Authorization to reproduce such material should be obtained from the copyright holders”

statement may appear as follows:

In-case where the nature of information / document calls for a restriction on its reproduction, the copyright statement

“Material on this site is subject to copyright protection unless otherwise indicated. The material may be downloaded without requiring specific permission. Any other proposed use of the material is subject to the approval of (name of agency). Application for obtaining permission should be made to (head of agency).

may be framed as:

- ii. The agencies should also be sensitive towards publishing any information having a third party copyright. Agencies should follow proper procedure specified by the copyright holders to obtain permission prior to publishing such information on their websites
- iii. If any published agency report is being reproduced on any website, whether as excerpts or in full, source of the same (Full Title of the Report / Document along with the name of the concerned agency and year of publication) should be provided.

25. TERMS AND CONDITIONS

With numerous websites being used to provide information, more and more visitors access information from the government websites. Clearly defined Terms and Conditions including clear disclaimers regarding the usage of websites should be provided on every government agency website.

Terms and Conditions shall address the following aspects:

- Ownership Details
- Usage Policy
- Legal Aspects
- Responsibility towards hyperlinked sites

It is the responsibility of government agencies to uphold and maintain the trust by the site visitor to the sites, government agencies should have clear Terms and Conditions. The Terms and Conditions should clarify whether the information available on the website may be construed as a statement of law to be used for any legal purpose or not. It should also specify in case of any legal dispute arising out of the content of the website, the matter shall be heard in a court of law.

In case the content is sourced / linked from a non-government website at the other end, the Terms & Conditions should clearly state this fact and disclaim responsibility for its accuracy and currency.

In case the website involves functions for financial transactions, appropriate disclaimers, framed in consultation with the involved agencies and the legal unit of the agency should be included.

Sample Terms and Conditions Statement

This website is designed, developed and maintained by (name of the agency)

Though all efforts have been made to ensure the accuracy and currency of the content on this website, the same should not be construed as a statement of law or used for any legal purpose. In case of any ambiguity or doubts, visitors are advised to verify / check with the Agency(ies) and/ other sources(s), and to obtain appropriate professional advice.

Under no circumstances will this Agency be liable for any expense, loss or damage including, without limitation, indirect or consequential loss or damage, or any expense arising out of or in connection with the use of this website.

These terms and conditions shall be governed by and construed in accordance with the Law Government of Bhutan. Any dispute arising under these terms and conditions shall be subject to the jurisdiction of the Royal

The information posted on this website could include hypertext links or pointers to information created and maintained by non-government / private organizations. (Name of the agency) is providing these links and pointers solely for information and convince. When visitor select a link to an outside website, visitors will be leaving the (Name of Department) website and are subject to the privacy and security policies of the owners / sponsors of the outside website.

(Name of agency), does not guarantee the availability of such linked pages at all times.

(Name of Department), cannot authorize the use of copyrighted materials contained in the linked websites. Users are advised to request such authorization from the owner of the linked website.

(Name of Department), does not guarantee that linked website comply with Government of Bhutan Web Standards and Guidelines.

26. HOSTING

It is recommended that following is considered for hosting websites and other web services:

- i. Government agencies websites shall be hosted in hosting infrastructure recommended by the Ministry of Information and Communication, Royal Government of Bhutan
- ii. The hosting service shall endeavor to ensure the high availability of websites and other web services. Availability of 99 % is to be ensured.
- iii. The hosting shall provide for secure remote access (except for agency on premise) through secure FTP or SSH or control panel to enable uploads to the Web Server
- iv. Agencies shall manage their websites through a secure management tool that provides control, flexibility and reliability.
- v. Regular incremental backups of all the hosted content for the purpose of ensuring business continuity are required. The agencies are required to have business continuity plan in place
- vi. Agencies shall ensure that Web security strategies are put in place. Real time even log monitoring for critical security incidents and periodic analysis should be included as well as to detect suspicious activity to provide quick response
- vii. Mechanisms to monitor security related policies (e.g. authentication, authorization, etc.), activity (e.g. privileged activity) and applications (e.g. IDS, IPS, firewall, etc.) in real time should also be put in place
- viii. The hosting infrastructure should have firewall (hardware firewall and software firewall) installed with appropriate configuration for data protection
- ix. Servers are required to be housed in a secure, managed equipment environment
- x. Server Load Balancer shall ensure that appropriate levels of resources are available to cater, for seasonal load peaks. Mirroring of websites and web services to provide continuity with ability to share load is recommended
- xi. Secure and private connection should be provided for administrative and management access

27. WEB SERVER SECURITY

The web servers will have appropriate security management practices and controls. Following practices should be ensured either by the managed service provider or the agencies:

- i. Develop agency information system security policy
- ii. Configuration / change control and management
- iii. Risk assessment and management
- iv. Standardized software configuration that satisfy the security configuration requirement prescribed by MoIC
- v. Implement corrective measures when BtCIRT issues vulnerability notifications
- vi. Conduct security awareness and training to web masters
- vii. Ensure contingency, operation and disaster recovery plans are in place

Following considerations are required during deployment and configuration of web servers:

- i. Ensure server operating systems are deployed, configured and managed to meet the security requirement of agencies and BtCIRT
- ii. To ensure web server operating system security, the IT infrastructure team / managed service provider should:
 - a. In a timely / regular manner patch and upgrade the server OS as may be deemed necessary
 - b. Disable unnecessary services, directory listing and applications
 - c. Configure operating system user authentication
 - d. Configure Web server resource controls
 - e. Perform security testing of the operating system as indicated by the server OEM

28. WEB CONTENT SECURITY

Following is recommended to ensure web content security to protect unauthorized access to content and authorized modification of the content:

- i. Commit to the on-going process of maintaining the security of the Web Servers
- ii. Use authentication and cryptographic technologies as appropriate to protect certain types of sensitive information with differing access privileges
- iii. Limit the use of active content / interactive elements on web pages as the interactive elements introduce web related vulnerabilities due to dynamic execution of codes
- iv. Backup critical information regularly / periodically
 - v. Establish and follow procedures for data recovery in case of compromise
- vi. Define complete web content access matrix that identifies which folders and files within the web server directory structure are restricted and which as accessible along with privilege levels
- vii. Use host based intrusion detection system (IDS), intrusion prevention system (IPS) and / or file integrity checkers to detect intrusion and verify web content
- viii. Protect each backend server (database server, directory server) from command injection attacks at both the web server and the backend server

29. NETWORK SECURITY

- i. The network shall be secured by appropriate controls such as intrusion detection system and firewalls sitting between the internet and the hosting infrastructure local area network. The quality of the hosting infrastructure should be built around the principles of secure computing, premises, processes and qualified personnel
- ii. The gateway of the infrastructure shall provide mechanism for authentication, access control and encryption in order to protect systems and information at the internet boundary
- iii. Operating system configuration on the web server should provide for additional layer of protection which includes:
 - a. File System Limitation: The web server shall have limited or no access to the host server's file system
 - b. Limited Interactive system: All non-administrative network users shall be removed from the computer that runs the web server to reduce the risk of circumventing any web server access control
 - c. Privilege Reduction – The web server should be run as non-privilege user, with limited access to system resources
 - d. Data and command validation – There shall be validation of expected data and command strings
 - e. Create Sterile Environment – Unnecessary services, files and executable programs should be removed from the web server environment to deny attackers any potential opportunity to bypass established security
 - f. Network monitoring and server audit logs

30. CONTENT MANAGEMENT SYSTEM SECURITY

Secure content management system should be used to develop and manage the websites. Following is recommended to ensure content management system security:

- i. The content management system is up-to-date with released security patches for CMS / platform used to develop the content management system
- ii. Establish strong Passwords and user Permissions. Password should be of minimum 8 characters which should have at least one upper case alphabet, one number, one special character.
- iii. Use of CAPTCHA during login into the CMS
- iv. Maintain regular / periodic backups
- v. Enable web application firewall
- vi. Use SSL
- vii. Modify the default 'admin / administrator' credentials
- viii. Modify CMS default Database Prefix
- ix. Disable Directory Indexing and Directory Browsing

31. CONTENT HYPERLINKING

Agencies should ensure that:

- i. Cross linkages between different websites may cause ambiguity to users / visitors about the ownership of a portion of the content as well as whom to be contacted in case of any enquires

“This link shall take you to a page outside the (agency website URL). For any query regarding the contents of the linked page, please contact the web master of the concerned website.”

- ii. Prior to creating any linkages between websites, verification is required to ensure that the security of the sites to be linked are as per the standard
- iii. Hyperlinks on any government websites are verified and checked on a regular basis to ensure that the information being provided through the hyperlinks is up-to-date, accurate and relevant
- iv. Broken links or those leading to ‘Page Not Found’ errors are checked on a regular basis and are rectified or removed from the site immediately upon discovery
- v. Visual distinction for links that lead of off sites are created using CSS controls or other mechanism.
- vi. Links are provided to a Website rather than duplicating information that is published on another website and should not link to Websites that are under construction. In addition, links should go to specific pages on the Website (deep links) rather than just homepages.

Sample Hyperlinking Policy if the agency has no objection to anyone providing a hyperlink to their website is depicted below.

“We do not object to you linking to the information that is hosted on our site and no prior permission is required for the same. However, we would like you to inform us about any links provided to our site so that you can be informed of any changes or updates therein. Also, we do not permit our pages to be loaded into frames of your site. Our pages must be loaded in new browser window.”

In case prior permission is required by anyone who wishes to provide link to a government website, the policy may be formulated as below.

“Prior permission is required before hyperlinks are directed from any website to this site. Permission for the same, stating the nature of content on the pages from where the link has to be given and the exact language of the Hyperlink should be obtained by sending a request at (email and / or phone of contact person)

32. METADATA

Metadata is structured data that describes the characteristics of an information resource and its intellectual property rights. Metadata is a vital tool for managing and providing access to electronic resources.

Following should be considered in describing, managing and preserving web content:

- i. Agencies should use metadata to describe their web based information to improve the visibility and discoverability of those resources in web based search engines
- ii. Agencies should use metadata for preserving and managing web content and ensuring continued accessibility over time
- iii. Agencies are required to apply the generic meta tags ‘keywords’ and ‘description’ which are indexed by the majority of commercial search engines. Agencies should use as many additional metadata as are necessary to enhance the resource description and maximize discovery.
- iv. Avoid using unnecessary keywords in the content as well as website meta data

33. CONTINGENCY MANAGEMENT

Agency website is its presence on the internet and it is very important that the site is fully functional at all times. It is expected of the Government website availability of minimum 99 %. Hence, all efforts should be made to minimize the down time of the website.

- i. All possible security measures should be taken to prevent agency website being defaced / hacked. If such event occurs there must be proper contingency plan, which should immediately come into force. If it has been established that the website has been compromised, the site must be immediately blocked. The contingency plan should clearly indicate as to whom is the person authorized to decide on the further course of action. The contact details of the authorized person should be available all the time with the web management committee. Efforts should be made to restore the original site in the shortest possible time.
- ii. A proper mechanism has the devised by the agency in consultation with the hosting service provider (if any) to ensure that appropriate and regular backup if the website data are being taken. This allows for a fast recovery and uninterrupted availability of the information

APPENDIX I – COMPLIANCE CHECK LIST

Sl. No.	Standard Requirement	Standard Description	Compliance Requirement	Compliance
1. Government of Bhutan Identifiers				
1.1 Bhutan Government Identity				
1.1.1	Government Logo displayed on all pages	Association to the Royal Government of Bhutan is demonstrated by the use of Government Logo prominently displayed on all pages of the website.	Required	
1.1.2	Agency Logo and Name displayed on all pages	Agency Logo (if available) and Name of the Agency is prominently displayed in the header of all pages of the website. Alternatively, agency letterhead is used in the website banner.	Required	
1.1.3	Information Ownership is clearly displayed	Ownership information is displayed on homepage and all the important entry pages of the website.	Required	
1.1.4	Website provides agency lineage information	Agency lineage is indicated at the bottom of the home page and all the important entry pages. Page title also included agency lineage as Agency Name followed by Royal Government of Bhutan	Recommended	
1.1.5	Ownership information in summarized form is provided	Web pages other than home and major entry pages has summarized ownership information.	Required	
1.1.6	Page tile is self-explanatory	Complete and self-explanatory title of the homepage (appearing on the top bar of the browser) is provided. All page titles are related to the content displayed on the page and an agency favicon image.	Required	
1.2 Government Domain				
1.2.1	Domain name ends with ‘gov.bt’ or ‘.bt’ or ‘edu.bt’	URL/ Domain Name / Web Address of any government websites is a strong indicator of its authenticity and status of being official. Based on the type of agency the website is registered under ‘gov.bt’ or ‘.bt’ or ‘edu.bt’.	Required	
1.2.2	Registered domain name is suitable	The domain name is ‘abbreviation of the agency’ or ‘popular term related to function of the agency’ or ‘short form of agency name’	Required	
1.2.3	Domain name does not contain special characters	Numbers and Special Characters like -, _, \$, @, %, etc. are not used in the domain name. If agency name comprises of a number, then the domain name can have numbers.	Recommended	
1.3 Domain Registration				
1.3.1	BTNIC registered the domain	Domain is registered by BTNIC and is not registered by any other agency. Government domains are not registered through	Required	

1.3.2	Contact address is updated with BTNIC.	third party domain registration service providers. Contact information is up-to-date with BTNIC. Whenever there is change in responsible person, the same is updated in the BTNIC records.	Required
-------	--	--	----------

2. Government Information Online

2.1 Minimum Content

2.1.1	Home page provides content / links to minimum content.	The home page of includes website banner, about the agency, search function, site map, date of posts, last update date in the footer.	Required
2.1.2	Prominently displays banner minimum details	Website Banner comprises of Government Logo, agency name, and colors of national flag or agency brand theme	Required
2.1.3	Sufficient information about the agency is provided in the website	About Agency includes organogram, role and functions (Mission, Vision, Mandate), public service links, tenders and notifications, press releases / announcements, contact address (agency, name, office address, P.O. Box), Telephone, facsimile, info / support email.	Required
2.1.4	Other optional information about agency is provided in the website	Website home page also includes official social media page / handle link, agency event calendar, media section, office location in Google Maps, major projects, schemes, customer service strategy, publication, and message from head of agency.	Recommended

2.2 Information Not Permitted

2.2.1	Information that is not permitted is not included in any of the webpages	Commercial advertisement, personal information, politically partisan content, information that offensive / harmful to national sentiments, confidential information, security procedures and online advertisement (Google Adwords and AdSense) is not published in the website.	Required
-------	--	---	----------

2.3 Common Page Elements

2.3.1	Agency Identifier is prominently displayed in the webpage header	Web Page header comprises of Agency Name and Agency Tagline. If agency has letterhead that comprise of agency name, agency tagline and any other information then letterhead can be used.	Required
2.3.2	Web page header includes required elements and placement is proper	Government Logo is placed on the top left corner and agency name is placed in in the middle of the header. Agency logo (if available) is place at the right corner of the header.	Required
2.3.3	The government logo links to home page of the website	The government logo should be clickable and when site visitors click the logo it should re-direct to the home page of the website.	Required
2.3.4	Web page footer is properly designed to provide information / link to	The site footer consists of links to Site Map, Contact Us, Privacy Statement, Copyright Statement, Legal / Disclaimer	Required

	information	Statement, Ownership Information and Accessibility Statement.	
2.4	Information Request and Feedback		
2.4.1	Feedback collection mechanism is formalized and implemented	Feedback is collected through online forms and mechanism is in place to ensure timely response to feedback/queries received through the website	Required
2.4.2	Contact information is clearly provided	Full contact details, service locations with address, fax, telephone number and mailing address is provided in the website	Required
2.4.3	Webmaster's contact information is accessible to all site visitors	Webmaster's email ID and contact information of entity for fault reporting.	Required
2.4.4	Support service contact information is provided.	General enquiry email address is created and person (s) is (are) assigned to handle queries and feedback. If there are multiple service centers information about all the service centers is provided.	Required
2.4.5	Alternative formats for feedback / service request forms are available	Information request / feedback form is downloadable and email address / service location is provided on where to submit the form.	Required
2.5	Electronic Forms		
2.5.1	Forms in electronic format are available with required security implementations	Information collection forms are in digital format (interactive, e-form, downloadable). Appropriate security precautions are in place to safeguard visitor information during transmission and storage.	Required
2.5.2	The forms are compatible with available technologies.	The electronic forms have required security precautions and downloadable forms are in compatible formats. If special software is required, information is provided. Recommended format is PDF.	Required
3.	Technical Standard		
3.1	Supported Browser and Devices		
3.1.1	Browser compatibility is ensured	The website is compatible with current and prior releases of internet explorer, MS edge, Firefox, Chrome and Safari	Required
3.1.2	Device compatibility is ensured	Any devices with a minimum resolution of 1024X768 can be used to access the website. This includes devices with different screen sizes.	Required
3.1.3	Site can be operated using different pointing mechanism	All the functionalities of the website are accessible using pointing mechanism (keyboard, mouse and touchpad)	Required
3.2	Analytics		
3.2.1	Stable Web Analytics tools is used for web access data analysis	The web master has subscribed to a minimum one stable Web Analytics tool. The tool supports standard statistical reports.	Required
3.2.2	The analytics tool has required	The web analytics tools provide, to a minimum, following	Required

capabilities

capabilities: real time data updates, customizable dashboard, row evolution, event tracking, content tracking, site search analytics, geolocation, page transitions, and traffic from search engines.

3.3 HTML			
3.3.1	Compliance to HTML 5 or XHTML 1.0	Website complies with HTML 5 specifications. In case HTML 5 is not possible then XHTML 1.0 specifications are to be used.	Recommended
3.3.2	WAI-ARIA compliance in absence of HTML 5 compliance	Features which have no support or partial support to current browsers are not included instead WAI-ARIA features are to be used.	Required
3.3.3	Consistent accessibility is ensured	The website is accessible using browsers and devices with CSS and JavaScript disabled which is thoroughly tested.	Required
3.3.4	Deprecated elements are avoided	Deprecated HTML elements and attributes are not used in the website.	Required
3.4 CSS			
3.4.1	CSS 3 or atleast CSS 2.1 compliance is ensured	The website is designed using CSS 3 or atleast CSS 2 Revision 1.	Required
3.4.2	Implemented CSS gracefully degrades	CSS implementation provides for “graceful degrade” as: W3C CCS 3 to browser specific CSS to W3C CSS 2.1 to default browser styling. Browser styling applies if CSS is not supported.	Required
3.4.3	Experimental features and legacy browser layouts are not used	The website does not use experimental implementation of CSS by browser companies. Variation and styling for legacy browsers that do not support level 3 features are not used.	Required
3.5 Accessibility			
3.5.1	Text alternatives for non-text content is implemented	All non-text content has text alternatives allowing use of assistive technologies, large, print, braille, speech, etc. by site visitors.	Required
3.5.2	Multimedia content has description about the content.	Captions or text alternatives or descriptions are provided for all multimedia content. Visitors who cannot use the multimedia content and use assistive technologies will be able to use the content.	Required
3.5.3	User control provisions for multimedia content is implemented	Option to pause / stop and volume control is available for users if audio / video content automatically plays for more than 3 seconds. Volume control does not affect the device volume.	Required
3.5.4	Information about the implemented media control mechanism is provided	In case time limit for viewing content is set then required information is provided to the site visitors. For all content, enough time is provided for visitors to read / listen / view the content.	Required

3.5.5	Moving, blinking and scrolling is minimum	Moving, blinking and scrolling controls used is minimum that is presented in parallel with other content.	Recommended
3.5.6	Provide user options to control moving, blinking and scrolling content.	In unavoidable situation where moving, blinking or scrolling content is used then a mechanism is provided to pause or stop or hide such content.	Required
3.5.7	Content that causes seizures is not included	Content design that causes seizures is not used in the website. Web pages do not contain anything that flashes more than 3 times in any second period.	Recommended
3.5.8	Operational predictability is ensured	All the web pages appear and operate in predictable ways. Changing the settings of any user interface component does not automatically cause a change of context. If change happens then visitor is provided with the relevant information.	Required
3.5.9	Input assistance mechanism is implemented adequately	Mechanisms to help visitors avoid and correct mistakes through error identification, provision of labels or instructions at field level are implemented wherever applicable.	
3.6	Mobile		
3.6.1	Device compatibility is ensured	The website can be viewed coherently from devices with different presentation capabilities and access mechanism. The content is accessible on a range of devices irrespective of difference in presentation capabilities and access mechanism. Websites may paginate their content in various ways corresponding to difference in device characteristics.	Required
3.6.2	Deficient work arounds are implemented	Adequate steps are taken to implement work around for deficient. Deficient means non-support of mandatory features of relevant standard or recommendations.	Required
3.6.3	Real device testing is done	The website is properly tested in real devices before launching even if emulators are used to test during development.	Required
3.6.4	Mobile device accessibility is properly tested	Minimal navigation is maintained at the top of the page.	Recommended
3.6.5	Short entry point URIs is implemented	URIs / Site Entry Points are kept short that can be easily used in mobile devices.	Recommended
3.6.6	Access keys for potential frequently accessed functions is configured	Access keys are assigned to links in navigational menus and frequently accessed functionality.	Recommended
3.6.7	Avoid unnecessary pop-ups or auto page refreshing	Unnecessary pop-ups or other windows are not implemented and periodic auto-refreshing of pages is not implemented	Recommended
3.6.8	Content design and presentation is compatible in different screen sizes	Content is suitable for use in devices of different screen sizes. Provide consistent navigation mechanism.	Required
3.6.9	Page size is consistent with the device memory and screen size.	Pages are divided into usable portions and the overall size of page is appropriate to the memory limitation of device used to access the website. One direction scroll implemented.	Recommended

3.6.10	Images can be easily rendered	Images used can be easily rendered by all the expected devices.	Required
3.6.11	Spaces are simple space character	Graphics is not used for spacing	Recommended
3.6.12	Limited use of high resolution images	Large or high resolution images are used only in situations where critical information is lost due to resolution change.	Recommended
3.6.13	Use of colour does not impact accessibility	Information conveyed with colour is also available without colour.	Required
3.6.14	Foreground and background colour combination is appropriate	Foreground and background colour combinations provides sufficient contrast	Required
3.6.15	Content on background image can be accessed easily	Content on pages with background images is readable and also can be accessed using assistive technologies	Required
3.6.16	Frames are not used in the website	Frames should not be used as many mobile devices do not support frames	Recommended
3.6.17	Tables are not used for content presentation	Use of tables or nested tables should be used only if device support for tables is ascertained.	Recommended
3.6.18	Style sheets are used to control layout and presentation	Unless devices are known not to support style sheets, use style sheets to control layout and presentation. Content is organized in such a way that content can be accessed without style sheets in those devices not supporting style sheets.	Recommended

3.7 Files

3.7.1	Special characters are not used to name files	File names are maintained same as the document title. File names does not include special characters. (-) and (_) can be used to replace other special characters.	Recommended
3.7.2	Permanent URLs are used for documents	URL links to the most current version of the content / document. Site visitors are provided with information if they are not accessing the most current file.	Required
3.7.3	Files are optimized for faster loading and download	Compression and optimization techniques are used to keep the file sizes small which includes all files which are delivered to web browser.	Required
3.7.4	Clean URLs are used	All the site URLs comply with clean / semantic / search engine friendly URLs.	Recommended

3.8 Server Environment

3.8.1	Website hosting server is secure	The hosting environment is secure with adequate implementation of DMZ and related infrastructure security concepts.	Required
3.8.2	Website site hosted in supported Operating System	Operating system used in the hosting environment is OEM supported / OEM partner supported or community supported and is under valid production life.	Required
3.8.3	Website is hosted in full production version of operating system.	Operating system is not technical preview or beta test or similar release. OS is full production release candidate with adequate support from OEM / Developer community.	Required

3.8.4	Website is hosted in proper production environment	Application / Web Server used is not packaged platforms intended for development like single installer package of PHP, MySQL, and Apache (e.g. XAMPP, MAMP, WAMP installer packages).	Required
-------	--	--	----------

3.9 Desktop Development Environment

3.9.1	Development workstations run credible operating systems	Use any community / vendor supported Operating System that has not reached end of life. The operating system used is not phased out by supporting community / OEM vendor at the time of website development or enhancement.	Required
3.9.2	Development workstation run full production release of Operating system	Operating systems in the development workstation are not any or pre-production release. All workstations have full production release of the operation system.	Required
3.9.3	Website is developed using community support / OEM vendor or OEM partner supported technology stack.	Tools / IDE / technology stack used for development of the website is within the support life provided either by the OEM vendor or OEM vendor partner or community.	Required
3.9.4	Technology stack used for development are stable releases	Tools / IDE / technology stack used for development of the website are stable releases. Beta or technical review release candidates are not used.	Required

4. Structural Standards

4.1 Layout and Design

4.1.1	User friendly content and website functionality	The primary content or functionality of the page is prominently displayed and obvious to the site visitors. Website is designed with accessibility and usability in mind.	Required
4.1.2	Content is clear and readable	Content has strong contrast from decorative elements and images.	Required

4.2 Website Hierarchy and Structure

4.2.1	Website has well-structured content	Website structure entails organizing website's content information flow and category or subject hierarchy in such a way that visitors can logically move through the website.	Required
4.2.2	Sitemap and breadcrumb are implement for access tracking	Website structure allows site visitors to easily find information and track their progress. Visitors can access the site map and navigate the links to access relevant pages.	Required

4.3 Page Layout

4.3.1	Consistent page layout across website	Consistent page layout is maintained throughout the website. Placement of navigation and text elements is uniform access the website.	Required
4.3.2	Visitors are guided to appropriate content position	Webpage elements are used in such a way that scroll within element is avoided. Important elements are properly focused to guide visitors identify correction positions.	Recommended
4.3.3	Compliance with the template is	The page layout is incompliance with the templates provided in	Required

	ensured	the web standards.	
4.4	Navigation		
4.4.1	Website is developed ensuring ease-of-use for all site visitors	The website consists of navigation scheme that is consistent across the website. In most cases three click principle is adhered to. Under construction page links are not published in the website.	Required
4.4.2	Insightful navigation design	Navigation system is insightful allowing visitors to easily locate information or services. Breadcrumb is provided on the top of all pages that reflects navigational sequence.	Required
4.4.3	Every page provides important functionality	Every page consists of link to home page, search facility, language change option, and font sizer.	Required
4.4.4	Content flow and cross-referencing is easy	All related content is adequately linked internally within the site for easy cross-referencing. Provision to bypass repeating block of content is provided. One of the techniques used is ability to move to top of the page.	Required
4.4.5	Consistent nomenclature is ensured	Consistency in nomenclature is maintained across the site.	Required
4.4.6	Menu organization is consistent across the website	Top menu has up-to a maximum of three drop down submenus and based on the need of information architecture, side bar menus are used to ensure easy content flow and cross-referencing.	Required
4.5	Sitemap		
4.5.1	Website sitemap is available in all page footer	The website has sitemap linking Homepage and all important entry pages. A proper site map provides convenient and easy-to understand view of the contents in the whole site.	Required
4.5.2	Site map provides link to all pages	The sitemap is universally accessible and is developed using plain text / appropriately parsed XML in hyperlink format.	Recommended
4.5.3	Regular update of sitemap	The sitemap is regularly reviewed and updated. Whenever new pages are added it is essential that sitemap is updated.	Required
4.6	Images and Graphics		
4.6.1	National identity images and graphics is as per original colour and aspect ratio	As and when images and graphics of national identity are used proper ratio and colour is preserved.	Required
4.6.2	Images and graphics are self-explanatory	All images and graphics line buttons and icons used are simple and symbolism is self-explanatory and relevant	Required
4.6.3	Buttons and icons are adequately sized	Buttons and icons are of appropriate size and can be easily recognized in all resolution screen sizes	Recommended
4.6.4	Graphics usage is appropriate	Major content is not represented using graphics	Recommended
4.6.5	Graphics is in compatible formats	Graphics format is used in either GIF, JPEG, PNG or SVG	Required
4.6.6	Optimized display of large graphics	Thumbnails are used to display large graphics and full size graphics is displayed in printer friendly version	Recommended
4.6.7		Large GIF files are interlaced to speed up image download	Recommended

4.6.8	Optimized use of background for better downloads	Background and any other images are optimized to improve download speed. Background images are simple and of low resolution.	Recommend
4.6.9	Meaningful use of multi-media	Multi-media (audio, animation and audio) is used meaningfully to convey critical messages	Recommended
4.6.10	Animations are adequately described	For all animations used in the website, descriptions are provided so that user can control the animation	Recommended
4.6.11	Alternative text for images and	All images contain alternative text equivalent	Required
4.6.12	compliance with accessibility guidelines	All infographics comply with accessibility guidelines. Text equivalent of the information the infographics is conveying is included.	Required
4.7	Language and Text		
4.7.1	Clear and informative page title is provided	The page title is clear and concise yet descriptive of the topic of the page and is unique to each page. Common title is not used.	Required
4.7.2	Bilingual content is provided	The content is at least bilingual (Dzongkha and English)	Required
4.7.3	Concise article headings	Heading is concise yet descriptive of the content block standing on its own.	Required
4.7.4	Consistent heading styles used	Consistent heading style is maintained across the site and heading levels are used properly. For example, main headings in <h1>, sub-sections <h2> and follows.	Required
4.7.5	Clear text content	Adequate contrast ratio (minimum of 4.5:1) is maintained between text and background. Sentences are formatted to avoid horizontal scroll.	Required
4.7.6	Font size is readable by normal viewers	Standard corporate font is used with minimum size of 12 points or 16 pixels	Required
4.7.7	Font sizes can be adjusted	Text resize option is provided with possibility up-to 200% but without loss of content and functionality. Text sizes can be re-sized without use of assistive technologies. Minimum of 3 re-size option is provided.	Required
4.7.8	Text content can be printed without losing context	Text in the website is readable in electronic and print format and page can be printed correctly on an A4 size paper.	Required
4.7.9	Text on images are prominently visible	Text on images is visible even if the image is disabled. Adequate contrast ratio is maintained. Text used as part of image is described to provide information about the text in image.	Required
4.8	Hyperlinks		
4.8.1	Hyperlink appearance is distinct	Hyperlinks appear obvious and standout from rest of the content. All textual links is of different colour than the normal text content.	Required

4.8.2	Links provide clear meaning of the content of target page	All the links are meaningful to provide the purpose of the link and can be easily understood. Visitors are not expected to rely on surrounding context to determine the scope of content in target page.	Required
4.8.3	Target does not impact the current page view	Links to other domain sites open in new window / new browser tab and is clearly visible.	Required
4.8.4	Any additional requirement to view content on the target page	Links that open document has the information about any required application / plugin / tool to open and view the document	Required
4.8.5	Download the page if cannot be opened	In case the required application is not installed in the device used to access the site then the document is automatically downloaded	Required
4.8.6	Large file information is provided	Large file information is provided for any linked document that is larger than 2 MB. File size information is provided in the link.	Required
4.9 Forms			
4.9.1	Data fields in forms are properly labelled	Form labels are clear, descriptive and unique. Hints such as mandatory, optional and data format are provided for each data field.	Recommended
4.9.2	Data fields are segregated	Related fields are grouped for better understandability. Legend text is provided wherever applicable.	Recommended
4.10 Errors			
4.10.1	Automatic error detection implementation	Errors / suggestions are automatically detected, fields of error are identified and user is provided with the indication.	Required
4.10.2	Custom error messages available	All errors provide custom message in natural language and precise to exact problem.	Required
4.10.3	Error / mistake correction or workaround provided	Error message is informative enough for site visitors to fix the problem or find work around and avoid repeating same mistake	Required
4.10.4	Client side data validation implementation	Client side data validation is included wherever applicable. Mandatory data validation is using JavaScript	Required
4.11 CAPTCHA			
4.11.1	CAPTCHA security implementation	All forms that are submitted without login implements CAPTCHA security.	Required
4.11.2	Multiple CAPTCHA formats	CAPTCHA is provided for all audience groups including visitors with different disabilities like audio captcha, etc.	Recommended
4.12 Tables			
4.12.1	Tables not used as design tool	Tables are used only for data display not as design tool. Tables are less accessible to users with disabilities and when viewed using smaller screens. Tables are also less friendly to search engine technologies and assistive technologies.	Required

4.12.2	Tables are appropriately described	Table summary or table caption is provided describing structure and purpose of the table.	Required
4.13 Colours and Background			
4.13.1	Website colour reflects agency brand	Colour scheme is in-line with the agency image, brand strategy of the agency and agency logo	Required
4.13.2	Use of uniform colour across the website	Uniform colour theme is applied across all pages in the website	Required
4.13.3	Text and background is compatible all platforms and devices	Textured backgrounds are not used. Colours used for text and graphics looks good on a variety of platforms, monitors and devices through use of 216 colour web-safe palette.	Required
4.13.4	Information can be accessed in colour and without colour	All information conveyed in colour is available without colour also.	Required
4.14 Site Search			
4.14.1	Internal site search functionality	Website has search box / search link place at same position on all pages	Required
4.14.2	Consistent display of search results	Search result is displayed consistently in easy to read format with search term highlighted clearly	Required
4.14.3	Advanced search option	Advanced search option is provided for more refined search. Advanced search also allows searching content from other sites.	Recommended
4.14.5	Search results from outside websites are clearly distinguished	Search results from other sites are distinguished from those of within the site.	Recommended
5. Website Design and Content Management			
5.1	Precise and concise website	Website is developed in a precise, concise and objective manner. Website uses plain language for content presentation.	Required
5.2	Stable and secure content management system used	Website is built on a stable and secure content management system which is based on What You Type Is What You See approach	Required
5.3	Bilingual support	The content management system is compatible to manage Dzongkha and English content	Required
6. Web Content			
6.1 Information Architecture			
6.1.1	Important information is easily accessible	Information of direct importance is accessible from the home page. If information cannot be displayed on the home page, then it is provided with least number of clicks.	Required
6.1.2	Meaningful flow of information	The relationship between different blocks of content remains intact even if different presentation styles are used. Site structure remains intact if visitors use assistive technologies.	Required
6.2 Content Characteristics			
6.2.1	Content presentation is best suited for	Lengthy content is provided with download options as PDF	Required

6.2.2	site visitors Content is accurate and clear	file. Content published in the website is presentable, authentic, adaptable, well written and robust. Status of the content, content author, and content update date is displayed.	Required
6.3	Web Content Development		
6.3.1	Web site content and elements can be understood by all audience	Homepage, major entry points and navigational elements are written in clear and simple language	Required
6.3.2	Content presentation is appropriate for different audience group	Content published in the website is such that diverse group of audience can easily read and understand. Language used is easily and correctly understood by all sections of the audience.	Required
6.3.3	Grammatically error free content	Content is free from grammatical errors / spelling errors and acronyms are not used as far as possible	Required
6.4	Management of Web Content		
6.4.1	Content review and refresh process	Content review and refresh process is established and adhered to for website content management	Required
6.4.2	Content version control and management	Appropriate version control process is adopted and version information is provided to the site visitors	Required
6.4.3	Compliance with process in standards	Content management process specified in the Web Standards is followed to manage website content	Recommended
7.	Website Management		
7.1	Role of website for communication is clear	Equal importance is attached to delivering information and services from website and other conventional channels.	Required
7.2	Information to DITT upon completion of website	Upon completion of website development, DITT will be informed about the new website for assessment on conformance with web standards	Recommended
8.	Website Management Committee		
8.1	Website Management Committee is formed	Website management committee is established with required representation which includes head of agency, head of ICT office, head of communication (if any), office representatives, legal officer, and Dzongkha focal person.	Required
8.2	Roles and responsibilities for members is formulated	Roles and responsibility of each member of the website management committee is clearly developed and adopted	Recommended
9.	Website Management Strategy		
9.1	Website management strategy is developed and reviewed regularly	Website management strategy is developed and activities are executed in compliance with the strategy. Strategy includes online service plan, financial plan, archival plan, and monitoring and evaluation plan.	Required
9.2	Website management monitoring	Activities included in the website management strategy are included in APA with relevant indicator parameter.	Recommended
9.3	Individual activities monitoring	The activities identified activities in website management	Recommended

strategy are included in IWP of the website management committee members

10. Webmaster			
10.1	Webmaster is identified	Web master is identified and is oriented with the responsibilities of web master	Required
10.2	Webmaster's performance monitoring	Web master's roles and responsibilities are updated in his / her IWP along with performance indicators related to website management	Recommended
11. Visitor Feedback			
11.1	Management of communication process with visitor formulated	Visitor feedback, comments, compliments, problem and query management process established and adopted.	Required
11.2	Timely response is provided	All submissions by visitors are monitored and if response is required, response is provided as per the set timelines.	Required
12. Documentation			
12.1	Website related documents are available	Documentations related to the website is maintained and used by relevant members of website management committee	Required
12.2	Website related document are secure	Documents are managed to ensure document security, availability and accessibility as and when required	Recommended
13. Decommissioning Website			
13.1	Website decommissioning strategy formulated	Website decommissioning process is adopted. Roles and responsibilities documented and members are oriented.	Required
13.2	Content preservation ensured	Website content will be archived before decommissioning website	Required
13.3	Domain de-registration planned	Domain will be de-registered after decommissioning the website	Required
14. Archival Management			
14.1	Archival management policy	Websites are storehouse of agency information that may need to be referred anytime. Hence, proper policy to identify content to be archived is developed and adopted.	Required
14.2	Regular archives are maintained	Archives of the website is maintained regularly with adequate records of the archives.	Required
14.3	Archived content accessibility	Archived content is accessible in relevant format to site visitors if they intent to access.	Required
15. Website Monitoring			
15.1	Website monitoring policy	Website monitoring policy is developed and adopted. Such policy is required to remain up-to-date with expectation of visitors and technology advancements.	Required
15.2	Regular monitoring of websites	Website is monitored regularly based on the policy developed. Monitoring is done to ensure website performance, functionality, traffic analysis and incorporation of feedbacks.	Required

16. Backup Management

16.1	Determine baselines and secure backup of baseline site	A clean backup baseline of website is maintained at all times. Baseline is bug free functional website.	Required
16.2	Archival of baseline	Archive of all baselines is maintained. Avoid situations to replace baselines.	Required
16.3	Backup site as and when there is update	Incremental backups between baselines are created as and when website is updated. Periodic backup of the site is maintained after proper testing for recovery.	Required
16.4	Regular backup at multiple locations	Weekly backup is maintained and kept in multiple safe locations viz. backup in local network, remote backup site and detachable storage	Recommended
16.5	Restore function is tested	Webmaster ensures website can be restored from the backup copy.	Required

17. Privacy

17.1	Website has privacy policy	Website has privacy policy statement clearly stating how the information collected from the site visitors. Privacy policy enumerates information collected about individuals when they visit the website, how collected information and disclosure terms and condition.	Required
17.2	Online information collection is secure	Adequate security is implemented to secure information collected using online forms while being transferred.	Required
17.3	Secure storage of collected information	Information collected from site visitors is securely stored to protect from misuse, loss, unauthorized access, modification and disclosure	Required
17.4	Cookies usage policy	Cookies usage is as per the privacy statement. Clearly stated policy with regard to cookies and information collection using cookies is formulated.	Required

18. Content Copyright

18.1	Website has Copyright policy	Website has a Copyright Policy, prominently displayed on the homepage. Copyright policy includes the terms and conditions on usage and reference by others.	Required
18.2	Third party content publication	Due permission has been obtained for publishing any information protected by copyright.	Required
18.3	Source acknowledgment	Sources of all documents, whether reproduced in part or full, is mentioned	Required

19. Terms and Conditions

19.1	Disclaimer Terms and Conditions	Website has comprehensive Terms and Conditions statements, linked from all important pages.	Required
19.2	Terms and conditions coverage	Terms and Conditions disclaims responsibility of the content	Required

sourced / linked from other websites and clearly indicates whether information available on the site can be used for legal purpose or not

20. Hosting			
20.1	Hosting infrastructure	Website is hosting in the infrastructure recommended by Ministry of Information and Communications	Required
20.2	Website availability is 99.9 %	Website is accessible to the intended audience in an efficient and secure manner on 24 x 7 basis with 99.9 % availability	Required
20.3	Hosting infrastructure access channels	Secure FTP or SSH or VPN channel or control panel is used to upload contents / files to Web Server. Website is managed using secure management tool.	Required
20.4	Business Continuity	Regular incremental backups are maintained to ensure business continuity.	Required
20.5	Peak load management	Server Load Balancer is implemented in the hosting environment capable to ensure availability during peak concurrent access situations.	Recommended
20.6	Security features	Hosting environment has features to monitor security related policies (authentication, authorization), activities (privileged activities) and security applications (IDS, IPS, firewall) in real time.	Recommended
21. Web Server Security			
21.1	Security management practices and controls	Information system security policy is developed and adopted. Security policy comprises of controls and configuration strategy, risk assessment and management approaches.	Required
21.2	Coordination with BtCIRT	All security recommendations from BtCIRT are implemented in the hosting environment.	Required
21.3	Vulnerability assessment and correction	Corrective measures are implemented when BtCIRT issues vulnerability notifications	Required
21.4	Updated Server environment	All patches are up-to-date in the hosting infrastructure	Required
22. Web Content Security			
22.1	Sensitive information encryption	Authentication and cryptographic technologies are used to secure sensitive information with differing access privileges	Required
22.2	Minimum use of active content or interactive elements	Use of active content / interactive elements is limited on web pages. Interactive elements introduce web related vulnerabilities due to dynamic execution of codes	Recommended
22.3	Leverage server security approaches	Host based intrusion detection system, intrusion prevention system and file integrity checkers are implemented. Servers are protected from command injection attacks. OS hardening activities are carried out regularly.	Required
23. Network Security			

23.1	Network security controls implemented	Appropriate security controls and tools are used to secure the network where website is hosted. DMZ is implemented in hosting premises. Infrastructure provides for authentication, access control and encryption mechanism.	Required
23.2	Only required ports are opened	Services and ports that are not required for website hosting are disabled or removed	Required
23.3	Proactive monitoring and reactive correction	Any known vulnerabilities are corrected with highest priority. Periodic vulnerability assessment is done and corrective measures are taken.	Required
24. Content Management Security			
24.1	CMS is up-to-date	The content management is updated with all patches and core components. Unnecessary plugins are uninstalled.	Required
24.2	Password Policies Implementation	Strong password policies are implemented. Password should be of minimum 8 characters which should have at least one upper case alphabet, one number, one special character.	Required
24.3	CAPTCHA security implementation	CAPTCHA is used as security feature during login into the CMS	Required
24.4	Disable directory listing	Directory Indexing and directory browsing is disabled. Default admin links and credentials are modified.	Required
24.5	Use SSL Certificate	Website hosted with SSL	Recommended
24.6	Modify CMS default configurations	CMS default admin URL, admin credentials, and default database prefix are modified	Required
25. Content Hyperlinking			
25.1	Content Hyper Linking Policy	Website has a comprehensive Hyper Linking Policy. Policy provides terms and conditions for linking external websites with the agency website and content link from other websites.	Required
25.2	Distinguishing outward linkage	Visual distinctions for links that lead to other sites are created using CSS controls or other mechanism.	Required
25.3	Hyper linked content accuracy	The mechanism is in place to check the accuracy of Hyperlinked Content that is linked from other websites.	Required
25.4	Broken Links	Mechanism is in place to ensure that there are not broken links (internal as well as external) or Page not found errors	Required
26. Metadata			
26.1	Meta data creation and updating	Adequate level of metadata is maintained to improve visibility and discoverability of the website. Continued access of web content even after archival is ensured through use of metadata.	Required
26.2	Keywords management	Unnecessary keywords are not used in the metadata	Required
27. Contingency Management			
27.1	Protection from hacking and fast recovery	Security measures are in place to prevent website from being defaced / hacked. Backup should be easily accessible when	Required

27.2 Contingency Management approach

website is defaced.

Adequate contingency policy is in place with roles and responsibilities for each member of the contingency team with decision making responsibilities.

Required

Appendix II– List of Reviewers

Sl. No.	Name	Designation	Agency
1	Tshering Yueden	ICT officer	Centre for Bhutan Studies and GNH
2	Karma Denkar	Asst. ICT Officer	Bhutan National Legal Institute
3	Dawa Zangpo	ICT Officer	Ministry of Agriculture and Forest
4	Sampa Dhendup	ICT Associate	National Assembly of Bhutan
5	Tshering Wangchuk	Assistant ICT Officer	National Land Commission Secretariat
6	Sonam Dargay	Assistant ICT Officer	Ministry of Home and Cultural Affairs
7	Budhiman Limboo	Assistant ICT Officer	Ministry of Home and Cultural Affairs
8	Purna Kr. Chhetri	Sr. ICTA	Jigme Dorji National Referral Hospital
9	Phub Dorji	ICT Officer	Ministry of Labour and Human Resources
10	Sangay Rabten	ICT Officer	Ministry of Labour and Human Resources
11	Jigme Drakpa	ICT Officer	Anti-Corruption Commission of Bhutan
12	Lobzang Jamtsho	Dy. Chief ICT Officer	Department of Information Technology and Telecom
13	Passang Dema	Sr. ICT Officer	Office of the Attorney General
14	Sangay Penjor	Sr. ICT Officer	Ministry of Foreign Affairs
15	Thinley Dorji	ICT Associate	Drug Regulatory Authority
16	Dendup Tshering	ICT Officer	Ministry of Economic Affairs
17	Tshering Tashi	Administrative Officer	Bhutan Standards Bureau
18	Tandin Pem	ICT Associate	Office of the Attorney General
19	Yeshey Dema	Sr. ICT Associate	Ministry of Works and Human Settlement
20	Ugyen Zangmo	ICT Associate	Bhutan Narcotic Control Authority
21	T.B. Chhetri	AE	Bhutan Standards Bureau
22	Ugyen Zangmo	ICT Associate	Bhutan Standards Bureau
23	Bikash Pradhan	Sr. ICT Officer	Construction Development Board
24	Rinzin Peldon	ICT Officer	Dzongkha Development Commission
25	Lotoey Pem	Sr. ICT Officer	Ministry of Home and Cultural Affairs
26	Tandin	ICT Associate	Royal Civil Service Commission
27	Kezang Choden	ICT Associate	Bhutan Council for School

28	Kezang Dema	Dy. Chief ICT Officer	Examination and Assessment Supreme Court, Royal Court of Justice
29	Tsheyang Tshomo	Dy. Chief ICT Officer	Ministry of Education
30	Ngawang Sherpa	Sr. ICT Officer	Ministry of Foreign Affairs
31	Sangay Yeshi	ICT Associate	Bhutan Standards Bureau
32	Mohan Kr. Pradhan	Sr. ICT Associate	Ministry of Information and Communication