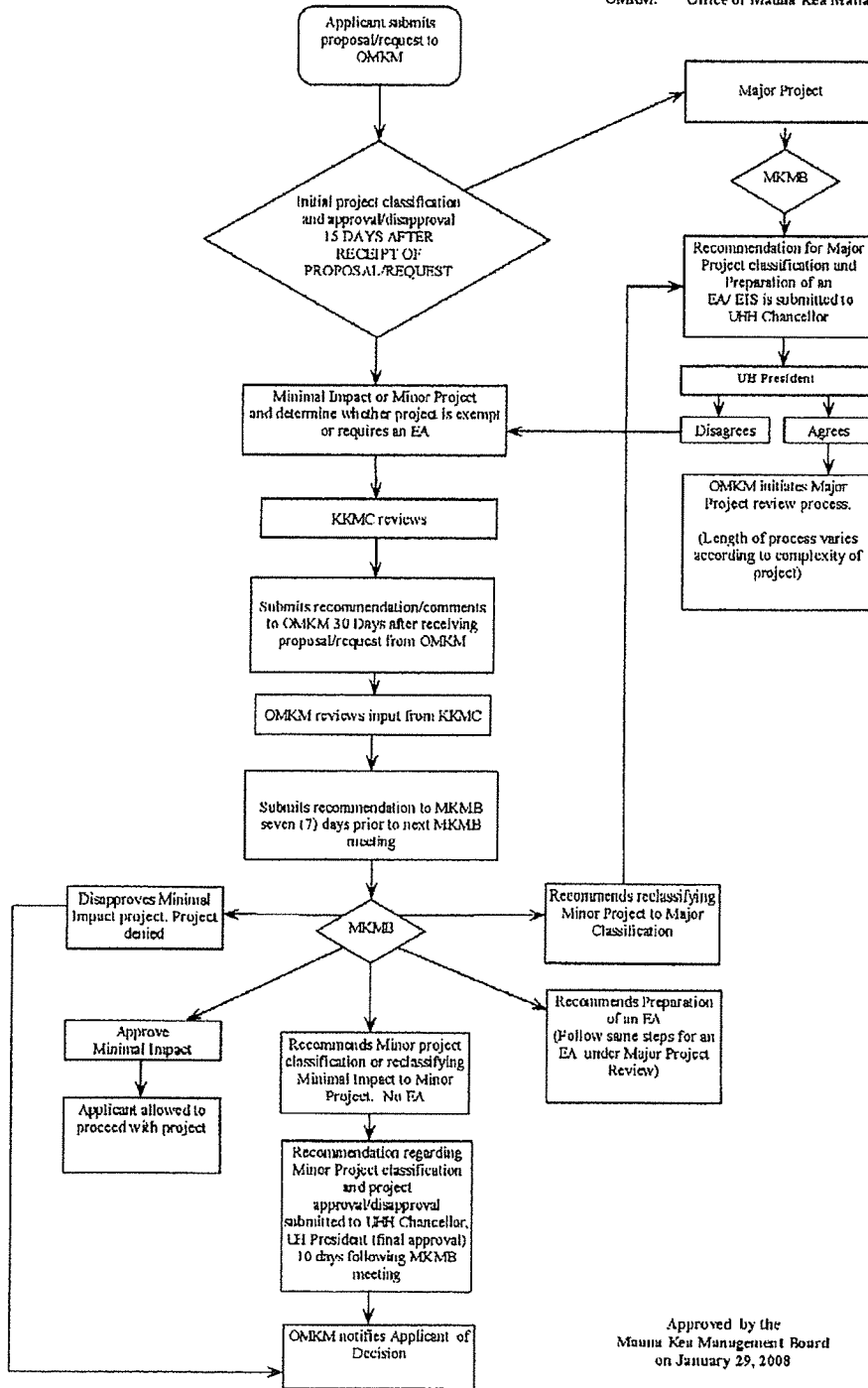


SCHEDULE FOR PROCESSING PROPOSALS SUBMITTED TO OMKM

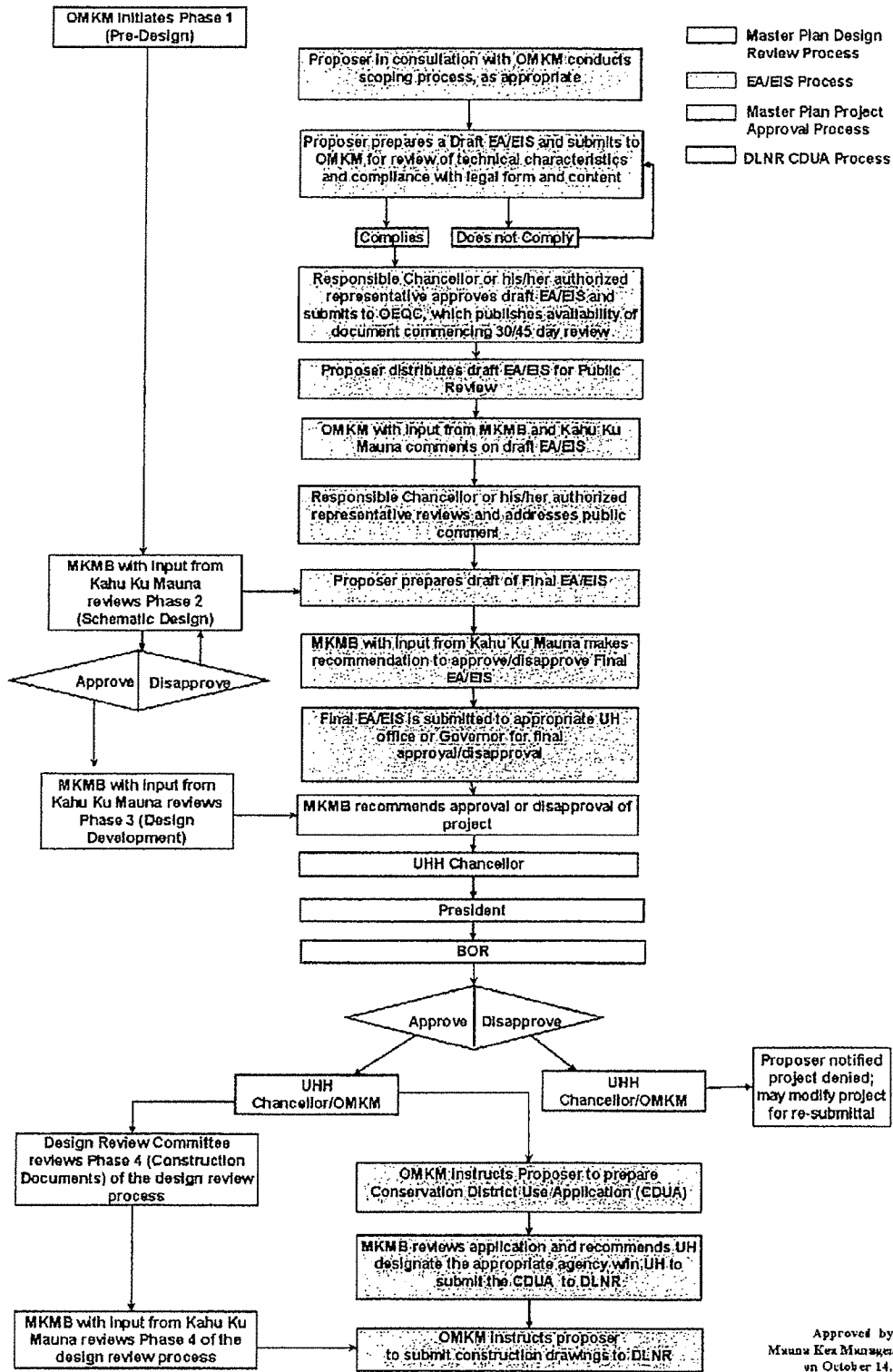
KKMC: Kahu Ku Mauna Council
 MKMB: Mauna Kea Management Board
 OMKM: Office of Mauna Kea Management



Approved by the
 Mauna Kea Management Board
 on January 29, 2008

FIGURE 1

MAJOR PROJECT REVIEW STEPS



- Master Plan Design Review Process
- EA/EIS Process
- Master Plan Project Approval Process
- DLNR CDUA Process

Approved by the
Mauna Kea Management Board
on October 14, 2009

FIGURE 2

ATTACHMENT A
Design Guidelines

DESIGN GUIDELINES

The purpose of the design guidelines is to direct development in a manner which integrates it into the summit environment. The design guidelines would apply to both renovations of existing facilities as well as new construction. General goals include the following:

Facility Siting: Siting decisions are the first steps in design and often determine the range of options that are available. Siting of various facilities are identified in the Physical Planning Guide. Candidate sites for recycling, expansion and new facilities are designated. New facilities are sited generally. Individual instrument locations are not specified. The NGLT and facilities on new site locations may require adjustments after viewing tests and archaeological inventory level surveys are conducted. The following siting criteria should be considered early in project development:

- Site facilities to avoid negative visual or functional impacts to existing facilities.
- Where known archaeological, cultural and natural resources exist the following sequence of evaluation is to be followed: 1) avoid disturbance of the resource, 2) minimize impact if unavoidable and 3) mitigate impact as needed. Natural resources include biological populations and geo-morphological features and geo-chemical resources.
- Set sufficient buffer distances between the facility and the cultural or natural resource. Buffer distances should be assessed individually based on the feature and the proposed facility.
- Site facilities to minimize visual impact from both the summit areas and off-mountain locations such as Hilo, Hämäkua and Waimea.
- Cluster facilities for proximity to roadway and utility lines. This should reduce site development costs and minimize visual impacts and unnecessary disturbances of the natural environment.
- If possible, avoid steeper areas and drainage paths.

Scale: Facilities should be scaled to minimize their impact on the natural landscape of the summit area. As much as practical, telescope enclosures should be designed to minimally accommodate the instrument. Where the size of

the enclosure is necessarily large, strategies should be considered to blend it into the surrounding landscape. The following are some strategies for reducing apparent scale:

- Bury portions of the structure as practicable.
- Place berms against the building to reduce visible areas.
- Shape superstructures using natural and curved forms which blend into the environment rather than orthogonal geometries.
- Color surfaces to blend into the landscape.
- Design exterior articulations and changes in color and texture to break up large continuous surfaces.
- Use materials that blend into the natural landscape.

Heights & Widths: Heights and widths of ridge facility designs should seek to minimize visible heights above existing ground as much as practicable. The following are maximum dimensions established to guide the design of facilities and to regulate the impact of new development.

- Facilities developed on ridge sites may be developed to a maximum height of approximately 130 feet measured from finished grade, and a maximum width of 130 feet.
- Support facilities in the astronomy precinct should be designed to reduce the height of vertical planes on exterior walls.
- Facilities that can be built underground are encouraged to do so to reduce the part that must remain above grade.
- Mounding cinders around telescope bases could be considered to reduce visible heights.
- Where practical, build into existing slopes to reduce the visible height.
- Facilities at Hale Pöhaku should be a maximum of two stories and designed to look like one story structures by techniques such as building into attic spaces as per the existing buildings.

Colors: Color plays an important part in visibility and thermal impacts. Color choices should seek to minimize the visual impact of the facility from surrounding areas. While it is understood that the mitigation of thermal impacts on observatory functions is an important consideration, domes should be colored to aid in masking

and blending facilities into the natural landscape. The following strategies are to be employed:

- For ridge facility domes, a combination of detailed geometrical design, surface treatment (i.e. reflecting vs. non-reflecting) and color (blues and grays) to minimize visibility against the daytime sky.
- For base sections, use browns and other earth colors to blend facilities with the natural cinder cone surroundings.
- For off-ridge facility enclosures use colors and patterns such as the mottled brown tones of the surrounding lava landscape.
- Color concrete utility pull boxes installed along underground utility routes, antennae pads and miscellaneous structures with mottled brown tones to blend with the surrounding lava landscape. No raw, uncolored concrete surfaces are to be allowed.

Surfaces, Textures and Material: Surfaces, textures and material used for construction in the Science Reserve should seek to blend the facility into the landscape. Selection criteria are as follows:

- As much as possible, surfaces should be non-reflective in the visible spectrum to minimize glare and visibility from distant areas.
- Wood and other native plant materials may be used, as appropriate, at lower elevations near Hale Pōhaku or for support facilities that relate to natural and cultural programs. Natural materials are suggested for walls and surfaces as much as possible.

Parking: Parking areas should be designed with sensitivity to existing topographic contours and fitted into the existing landscape. Parking layouts should be designed to retain natural landforms and vegetation as much as possible.

Roadway and Utility Development; Minimize roadway development in the Science Reserve to what is needed to support functions approved in the master plan. Follow existing road and utility corridors and alignments as much as possible. Utility lines should be buried. Accessory utility structures will be screened or designed to blend into the natural terrain. Road designs should minimize slope cutting.

Roofs: Roof design and material and color selections in conventional structures should merge the facility into the natural landscape. Reflective materials are to be avoided. At Hale Pōhaku, roof designs, colors and materials should be compatible with those of the existing mid-elevation facilities.

Fences, Walls, and Barriers: Fences, walls and barriers will generally be designed to fit into the landscape. Where possible, alignments should follow natural contours. Grading cuts and fills should be minimized. The use of locally available construction material is encouraged.

Signage: Signs should generally be small and unobtrusive. A possible exception may be the entry sign at the control point at Hale Pōhaku. This sign should be clearly visible during the day and night. Print colors should be black, blue or dark earth tones. It is suggested that interpretive signage be located in natural entry points and lookout areas and designed to blend into the natural landscape. The potential impact of snowfall should be considered in the design of signs. Signage should be placed to orient and educate visitors about safety issues and the protection of natural and cultural resources. It is recommended that there be a consistency of signage styles and symbols for the Science Reserve and Hale Pōhaku.

Language for signage should generally be in both Hawaiian and English. An exception to this policy would be traffic signs which would remain in English for safety reasons.

ATTACHMENT B
Project Review Process

PROJECT REVIEW AND DESIGN GUIDELINES

Purpose: A project approval and design review process is to be established to ensure that projects conform to and implement the concepts, themes, and development standards and guidelines set forth in this plan. Plans should support the Master Plan goals and objectives and contribute to the mountain's overall character and environmental quality.

Applicability: Any construction, installation or alteration upon any site, roadway, utility line, building, or other type of structure; any excavation, filling or change to surface topography; and any planting or removal of vegetation at a site may be undertaken in conformance with these procedures.

Participants: The University of Hawai'i Board of Regents and the President of the University of Hawai'i retain project approval and design review authority over all developments in the areas covered under General Lease S-4191. In order to assist the President and the Board of Regents in interpreting the design guidelines and intent of the Master Plan, the establishment of a Design Review Committee (DRC) comprised but not limited to professionals in the fields of architecture, landscape architecture, and engineering is recommended. UH MKM and the Mauna Kea Management Board will also review projects for overall conformance to the Master Plan while the DRC conducts design reviews (Figure XI-2).

General Review Standards: In reviewing plans and specifications the DRC, Mauna Kea Management Board and UH will be concerned with both the overall design concept, design details and overall impact. General concerns will include whether the proposed project:

- Conforms to the goals and objectives of the Mauna Kea Master Plan;
- Is consistent with the Design Guidelines in the plan;

Will not negatively impact adjacent facilities or uses;

- Promotes resource conservation and sustainability;
- Relates harmoniously to the surrounding landscape.
- Does not add significantly to negative cumulative impacts.

Plans found to be inconsistent with the Master Plan concepts and objectives shall be rejected. Major variations from development standards shall also be rejected. Determinations of consistency shall be at the sole discretion of the University of Hawai'i.

Minor and Major Projects: Separate processes are established for the review of "Minor Projects" and "Major Projects." Minor project review would end with the Office of the President. Major projects would be given final approval by the Board of Regents. Examples of minor projects are providing small structures or changing a building's color. The determination of which process is applied rests with the Office of the President. The decision is open to appeal to the President of the University of Hawai'i.

Design approval for projects that are described in the Master Plan will follow two review paths. The first path would be through UH MKM, the Mauna Kea Management Board and the Chancellor of UH Hilo. The second path would flow through the chancellor of the campus from which the proposal is initiated. For example, IfA proposals would be processed through the Chancellor at UH-Mānoa. Proposals generated out of UH Hilo or the Community Colleges would be processed through the Chancellor of UH Hilo or the Chancellor of Community Colleges. Regardless of the source of the proposal, the one constant would be that all proposals would include reviews and comments by the UH MKM, the Mauna Kea Management Board and the Chancellor at UH Hilo.

ATTACHMENT C
Minor Project Review

Review Procedures - Minor Projects

Upon notice of a proposed action, UH MKM will make an initial determination of the major/minor review process for the President who will make the final determination. The project would be reviewed at various phases. Phases of the review will generally be as follows:

1. ***Schematic Submittal:*** At the initiation of the project, a verbal and graphic submission should be made which outlines the action, describes its major characteristics, and briefly assesses its impacts on any existing or approved facility or use.
2. ***Design Development Submittal:*** After approval of the schematic phase, drawings addressing schematic design comments should be submitted for design development review. Emphasis should be given to relationships (setbacks, colors, materials, etc.) to adjacent properties and existing buildings.
3. ***Final Submittal:*** Should approval be given at the design development phase, final drawings and other documents should be submitted for final approval.

The Offices of the Chancellor will complete all phases of the review within 30 days of the submission of the review documents.

ATTACHMENT D
Major Project Review

Review Procedures - Major Projects

UH MKM will make an initial determination on major projects for the President who will again make the final determination. This determination is for processing category; not project approval. Actions determined to be major by the President would go through the following process:

1. **Pre-design Meeting:** This meeting may include the following participants: the applicant, the project architect/engineer, a representative of the University, a representative of IfA, and a representative of the DRC.

The purpose of this meeting is to introduce the applicant and the project architect to the design and environmental goals of the Mauna Kea Science Reserve, and to provide a context for further work and reviews. The applicability to the project of the overall design framework and the specific development standards and guidelines established in this Master Plan will be discussed. In particular, information regarding infrastructure and elements such as roadways and landscaping will be clarified. Information regarding the character of the Mauna Kea Science Reserve and Hale Pōhaku will also be provided.

2. **Schematic Design:** This meeting is to include the following participants: the applicant, the project architect and other appropriate consultants, representatives of the University of Hawai'i and the DRC.

At least seven days prior to the meeting the applicant is to submit seven half-sized schematic plans to the University for distribution. The schematic plans should include sufficient information to show how the proposed design satisfies the parameters established at the pre-design meeting and the design guidelines of this Master Plan.

The review will include the following:

- a. Site plan considerations including vehicular and pedestrian circulation, parking, service areas etc. The site plan should show relationships to adjacent facilities and resources.

-
- b. Overall building massing considering view planes, heights, setbacks, etc. All major sections and elevations should be indicated.
 - c. Building characteristics including architectural style, volumetric forms, building materials, colors, etc. and perspective drawings and/or models are encouraged. Models may be physical or 3D computer files.
 - d. Landscape plans showing general concepts, plant, rock and ground features.
 - e. Basic environmental effects (i.e. sunlight and shade, wind surface topography and drainage), especially on adjacent properties and resources.
 - f. Energy and other resource conservation methods.
 - g. Provisions for recycling and use of recycled materials.

Whenever possible, recommendations arising from the review will be forwarded to the applicant within thirty (30) days of the meeting. Other meetings in the schematic stage may be necessary if the design is not initially approved. The review period may be extended for up to thirty (30) additional days to review plans for large projects or projects which require more study. Schematic design submittals will also be reviewed by the Mauna Kea Management Board.

3. **Design Development:** This meeting is to include the following participants: the applicant, the project architect, representatives of the University of Hawai'i and the DRC.

At least seven days prior to the meeting the applicant is to submit seven half-sized design development plans and outline specifications to the University for distribution.

The information to be provided on the design development plans include the following:

- a. Site plan drawings shall at a minimum include the following information: all building locations and

sizes, number of stories, setbacks, locations of roads and walks, location and size of parking areas and service bays. Ground elevations with existing and finished grades, drainage, earthwork, utility lines, etc. should be indicated. Special attention should be given to relationships to adjacent facilities and nearby natural or cultural resources. Energy and resource conservation methods should be identified.

- b. Review of conceptual floor plan drawings at a scale of at least 1/8" = 1.0' for all building types.
- c. Review of elevation drawings. Inclusion of perspective drawings and a physical or computer 3D model is encouraged. Special attention will be given to dome and roof colors, forms and materials. Building colors and materials will also be evaluated.
- d. Review of sections of buildings and site. Attention will be given to any major changes in ground elevations in regard to drainage, views and adjacent facilities and natural and cultural resources.
- e. Review of landscape drawings. These drawings should show the location, type, size, and quantity of all plant materials, walks, landscape lighting, signs, paved areas, rock and ground surface materials, etc.

The design development review will be completed within thirty (30) days, and a report forwarded to the applicant containing the recommendations and requirements arising from the review and meeting. The review period may be extended for up to 30 additional days to review plans for large projects or projects which are deemed to require more study. Design development documents would also be reviewed by UH MKM and the Mauna Kea Management Board.

Approval will depend on the extent to which the proposed design satisfies the objectives, standards and criteria established in previous reviews, as well as those identified in this Master Plan. Other meetings in the design development stage may be held if the design is not initially approved. In no case should the applicant proceed with construction documents prior to design development approval.

4. Construction Documents Review: Construction documents will be checked for compliance to design review comments. Two half-sized construction drawings and specifications should be submitted to the University. Approval of the documents or a report listing modifications will be forwarded to the applicant within thirty (30) days of their receipt. The review period may be extended for up to 30 additional days to review plans for large projects or projects which are deemed to require more study. Drawings should, if possible, be accompanied by a computer disk containing the overall site plan and landscape plan.

Approval of construction documents by the Design Review Committee and the University of Hawai'i does not constitute authorization to proceed with the project. Compliance with applicable codes, laws, ordinances, and governmental agency conditions of approval is the responsibility of the applicant.