

Perry J. White Written Direct Testimony

My name is Perry J. White. I am the former President/now Principal Planner of Planning Solutions, Inc., and I was the principal author of the Conservation District Use Application (“CDUA”) HA-3568 for the Thirty Meter Telescope (“TMT”) project, which was submitted as Exhibit A-1 in this proceeding.¹ I last visited the site and other facilities in the summit area on October 5, 2016. As a result, I am well acquainted with the project and with the contents of the CDUA. A copy of my curriculum vitae was submitted as Exhibit A-30. Exhibit A-31 contains demonstratives related to my testimony that were prepared under my direction.

In preparing the CDUA, we took great care in ascertaining whether or not the TMT project qualified for the permit that was requested. In reaching our conclusions, we relied on the guidance provided by the existing Conservation District Regulations.

Section 13-5-30(c) of the Hawai‘i Administrative Rules (“HAR”) sets forth the following eight criteria that the Board of Land and Natural Resources (the “Board”) must apply in evaluating the merits of a proposed land use in the Conservation District.

- 1. The proposed land use is consistent with the purpose of the conservation district;*
- 2. The proposed land use is consistent with the objectives of the subzone of the land on which the use will occur;*
- 3. The proposed land use complies with provisions and guidelines contained in chapter 205A, HRS, entitled "Coastal Zone Management", where applicable;*
- 4. The proposed land use will not cause substantial adverse impact to existing natural resources within the surrounding area, community, or region;*
- 5. The proposed land use, including buildings, structures, and facilities, shall be compatible with the locality and surrounding areas, appropriate to the physical conditions and capabilities of the specific parcel or parcels;*

¹ As part of my work preparing the CDUA, I reviewed, among other things, the documents that were submitted as Exhibits A-1 through A-5, A-7 through A-13, A-48, and A-68.

6. *The existing physical and environmental aspects of the land, such as natural beauty and open space characteristics, will be preserved or improved upon, whichever is applicable;*
7. *Subdivision of land will not be utilized to increase the intensity of land uses in the conservation district; and*
8. *The proposed land use will not be materially detrimental to the public health, safety, and welfare.*

The Board considers all eight criteria when evaluating all requests for Conservation District Use Permits (“CDUP”). As detailed in the application and discussed below, I believe that the TMT project is consistent with the purpose of the Conservation District and meets all eight criteria for a Board approved CDUP under HAR § 13-5-30(c).

I. The Proposed Activity Is Consistent with the Purpose of the Conservation District (HAR § 13-5-30(c)(1))

“Astronomy facilities under a management plan” is an enumerated permissible use of the Resource subzone of the Conservation District. HAR § 13-5-24(c). The TMT project site is in the Astronomy Precinct that occupies approximately 525 acres of the summit of Maunakea within the 10,288 acre Mauna Kea Science Reserve, all of which is in the “Resource subzone” of the Conservation District. As discussed further in the next item, the stated objective of the Resource subzone is “to ensure, with proper management, the sustainable use of the natural resources of those areas.” HAR § 13-5-13(a) (emphasis added). As written, the regulations are clearly intended to allow, rather than prohibit, human use of the land within this subzone subject to appropriate management controls.

Section 183C-1, Hawai‘i Revised Statutes (“HRS”), states that the purpose of the Conservation District is “. . . to conserve, protect and preserve the important natural resources of the State through appropriate management and use to promote their long-term sustainability and the public health, safety and welfare.” As discussed in the TMT CDUA, the University of Hawai‘i

at Hilo (the “**University**”) and TMT International Observatory, LLC (“**TIO**”) (formerly, TMT Observatory Corporation) are both committed to achieving this purpose through appropriate management and mitigation measures. Accordingly, the design of the TMT project is consistent with the goals and objectives of the 2000 Mauna Kea Science Reserve Master Plan (Exhibit A-48), which purpose is to protect and preserve the resources of the University’s managed lands on Maunakea. The proposed project is also consistent with the provisions of the Board-approved Comprehensive Management Plan (“**CMP**”) and sub-plans for Maunakea. Exhibits A-9, A-10, A-11, A-12, A-13.

In this regard it is worth noting that TIO is the first astronomy development since the inception of the Master Plan to commit to contributing funds towards the management of Maunakea. TIO is also committed to implementing the mitigation measures described in the Final Environmental Impact Statement (“**FEIS**”) and the CDUA, including management actions contained in the TMT-specific management plan (which was based upon and is consistent with the CMP and its sub-plans). Notwithstanding the fact that it has been prevented from proceeding with the project on its original schedule and has no guarantee of ultimate approval, it has begun funding the management actions that were in the conditions of approval.

Hence, for the reasons outlined below, the TMT project is consistent with the purpose of the Conservation District.

UH Management Framework and Plans

As discussed in the CDUA, the TMT Project is consistent with CMP and sub-plans (Cultural Resources Management Plan, Natural Resources Management Plan, Public Access Plan, and Decommissioning Plan) that the Board approved on April 9, 2009 and March 25, 2010.

Exhibits A-9 through A-13.² These plans are the approved management documents for the UH

² A Final Environmental Assessment for the CMP was filed on April 23, 2009. Exhibit A-51.

Management Areas on Maunakea, and they provide the management framework and strategies that protect, preserve, and enhance resources within the UH Maunakea Management Areas.

The CMP and sub-plans provide management strategies designed to preserve and protect the resources located in the UH Management Areas. The University's Board of Regents, through OMKM, which is the University's management authority for Maunakea, is committed to implementing the CMP and sub-plans. In addition to this, in compliance with Exhibit 3 of HAR § 13-5 (entitled "Management Plan Requirements"), the TIO has developed a TMT Management Plan (attached as Exhibit B to the CDUA, Exhibit A-1) that adopts the approach, goals, objectives, findings, recommendations, and management strategies and actions of the CMP and sub-plans in their entirety. As previously mentioned, the TIO has committed to implementing applicable elements of its Management Plan.

TMT Site Management Plan

The TMT Management Plan is intended to guide various activities and uses within the TMT Project area. The TMT Management Plan provides a general description of the proposed TMT project, the existing conditions on the parcel, proposed land uses on the parcel, and reporting schedule. It also provides for implementation of all relevant action items and plans of the CMP and sub-plans on a site-specific basis, ensuring that the management actions called for in the CMP and sub-plans are effectively and responsibly implemented in the areas that are used for the TMT project. Additionally, the TMT Management Plan sets forth mitigation measures in the form of Best Management Practices and conservation methods intended to mitigate the impacts of the TMT project on Maunakea's varied resources. *See, e.g.,* Table 4-1 in Exhibit B of the CDUA (Exhibit A-1). The TMT Management Plan provides site-specific information and complements the CMP and sub-plans. By following the applicable provisions of all of the plans (the CMP, sub-

plans, and TMT Management Plan), the University and the TMT Observatory Corporation will fulfill the purpose of the Conservation District concerning the TMT project.

As acknowledged in past actions by the Board, astronomy is an environmentally responsible and economically sustainable use that does not extract a large amount of resources and does not consume significant natural resources once constructed. In addition, the TIO will develop, in compliance with the CMP (Exhibit A-9) and the Decommissioning Plan (Exhibit A-13) approved by the Board, a project-specific decommissioning plan pursuant to which it intends to restore the project site at the end of the useful life of the observatory.

The design of the TMT project itself is consistent with the goals and objectives of the 2000 Master Plan as well as the CMP and sub-plans. Furthermore, as detailed in the TMT CDUA, the project will not threaten the health, safety and welfare of the public, as the project will be developed and operated in a responsible manner in compliance with the Conservation District rules and all other applicable laws and regulations.

In summary, the TMT project will be developed and operated within a strong management framework that ensures the conservation, protection and preservation of the important natural resources of the Conservation District. Therefore, the TMT project is consistent with the purpose of the Conservation District as set forth in the HAR § 13-5-30(c)(1).

II. The Proposed Activity Is Consistent with the Objective of the Resource Subzone (HAR § 13-5-30(c)(2))

The TMT project site is in the Resource subzone, whose objective “...is to ensure, with proper management, the sustainable use of the natural resources of those areas.”

Pursuant to HAR § 13-5-24(c), astronomy facilities under an approved management plan are an identified use in the Resource subzone. This means that astronomy facilities can be allowed, with proper management of the resources, in that subzone. In addition to being an identified use, as discussed throughout the TMT CDUA as well as above, both the University and

TIO are committed to managing the natural and cultural resources throughout the UH Management Areas in a way that fulfills the objective of the Resource subzone and the purpose of the Conservation District.

The proposed TMT project will help meet the objectives of the Resource subzone by using the superb astronomical resources that Maunakea possesses to maintain Hawai'i at the forefront of astronomical research while also implementing and supporting overall Maunakea management activities that will promote the sustained use of the natural and cultural resources in the subzone.

The University and TIO have committed themselves to develop and operate the proposed project in compliance with the Conservation District rules, CMP, sub-plans, TMT Management Plan, and with all conditions that the DLNR staff report recommended be attached to the TMT CDUP. Adherence to these plans and conditions will ensure the sustained use of the natural and cultural resources in the Resource subzone.

III. The Project Complies with Chapter 205A, Hawai'i Revised Statutes (HAR § 13-5-30(c)(3)).

Chapter 205A, HRS, defines Hawai'i's Coastal Zone Management Area as consisting of all lands of the State (excluding those lands designated as state forest reserves) and the area extending seaward from the shoreline to the limit of the State's police power and management authority, including the United States territorial sea. It then establishes guidelines for their use. Many of the objectives of the Coastal Zone Management program parallel the purpose and objectives of the Conservation District. The location of the TMT project is outside the coastal areas (Special Management Area and Shoreline Setback Area) that are designated for more intensive regulation. As detailed in Section 2.3 of the TMT CDUA, the TMT project is in compliance with the purpose and objectives of the Conservation District and is also in compliance with the objectives of Chapter 205A, HRS, specifically including those objectives that do not overlap with the Conservation District but are unique to Chapter 205A.

IV. The Proposed Land Use Will Not Cause Substantial Adverse Impact to Existing Natural Resources Within the Surrounding Area, Community or Region (HAR § 13-5-30(c)(4))

Sections 3.2 through 3.14 of the FEIS for the TMT project describe the existing natural resources that could be affected and detail the proposed project's potential impacts. In light of the project's compliance with all applicable rules, regulations, and requirements, with the CMP and sub-plans, and with the TMT Management Plan, and considering the implementation of the mitigation measures committed to in the FEIS and separately through additional mitigation measures as may be imposed by the granting of the CDUA, the analyses that have been conducted for the proposed project show that it will not cause substantial adverse impact to the existing natural resources within the surrounding area, community or region.

In reaching this conclusion, it is particularly important to consider the context of the project site. In this case, the TMT project site is within the Resource subzone of the Conservation District where astronomy is a specifically identified use. Indeed, the area contains 11 other observatories. The addition of another observatory will not substantially alter the present condition of the natural resources of that area. Nonetheless, the TMT Project is designed in a manner that will substantially mitigate and reduce its impact on natural resources, such as:

- As detailed in Section 3.9 of the TMT Management Plan (Exhibit B to the TMT CDUA), the TIO is proposing to fund the restoration of the former jeep trail up Pu'u Poli'ahu.
- TIO will re-naturalize a portion of the Batch Plant area.
- TIO also proposes to camouflage the utility pull boxes in certain locations to reduce the visual impact on the Maunakea summit.
- The visual impact of the Access Way will be mitigated by shading the pavement in various areas to blend in with its surroundings and using guardrails made of wire instead of solid metal.

- The dome of the observatory has been designed to fit very tightly around the telescope and the telescope has been designed to be as short as possible, thus reducing the visual impact of the TMT facilities.
- The coating of the observatory dome will be a reflective aluminum-like coating which will reduce the visibility of the structure during the day.

The TMT Observatory also mitigates its overall impact on cultural resources by: (1) selecting a site off of the Kūkahau‘ula summit area and away from known historic properties and cultural resources; and (2) selecting a site that minimizes the impact of the project on viewplanes. Analyses conducted on behalf of the University and TIO concluded that with the implementation of these measures, the project will have a less than significant effect on the cultural and historic resources of Maunakea. Such analyses include, but are not limited to, the Cultural Impact Assessment Report (Exhibit A-5, Appendix D), the Cultural Impact Statement for the 2000 Master Plan (Exhibit A-5, Appendix E), Mauna Kea-Ka Piko Kaulana o ka ‘Āina (Mauna Kea-The Famous Summit of the Land) (Exhibit A-5, Appendix F), the Archaeological Inventory Survey, Mauna Kea Summit Area (Exhibit A-5, Appendix G), the Archaeological Assessment Report, Hale Pōhaku (Exhibit A-5, Appendix H), the Archaeological Inventory Survey of the Astronomy Precinct in the Mauna Kea Science Reserve (Exhibit A-5, Appendix I), and the Mauna Kea Historic Preservation Plan (Exhibit A-5, Appendix J). For these reasons, construction and operation of the proposed facilities would not have a substantial adverse impact on natural resources in the area.

It is also important to note that the University and TIO have taken the additional step of adopting measures to avoid and minimize direct and indirect impacts on cultural practices. These include, but are not limited to: (1) complying with all applicable provisions of the CMP and sub-plans; (2) engaging in direct and regular consultation with Kahu Kū Mauna, with the broader community, and with cultural practitioners on various issues; (3) establishing an outreach office to

engage with the larger community; (4) developing and implementing a cultural and natural resources training program for all TMT staff; and (5) minimizing TMT observatory operations (up to 4 days per year) to accommodate cultural activities on culturally sensitive days of the year. Other than limiting access to the actual construction site for safety reasons and to the interior of the Observatory facilities once it is completed, the Project will not restrict anyone from any portion of the summit area.

The proposed project will operate in accordance with the TMT Management Plan, the CMP and its sub-plans, as well as other relevant rules, regulations, and requirements. As documented in the FEIS for the TMT project as well as Table 2-1 of the CDUA, the TMT Management Plan, the CMP, and its subplans propose mitigation measures and management actions that will prevent substantial adverse impact to the natural resources. The overall impact of the TMT Project is further mitigated by its educational, research, and economic benefits. The TMT Observatory will create new jobs, provide educational and research opportunities, and advance scientific knowledge.

Thus, when considering the TMT Project as a whole, including the context of the project site and the project's mitigating factors, the TMT Project will not have a substantial adverse impact on the existing natural resources in Maunakea or its surrounding area, community, or region.

V. The Project is Compatible with the Locality and Surrounding Areas and Is Appropriate to the Physical Conditions and Capabilities of the Parcel (HAR § 13-5-30(c)(5))

As detailed in the TMT CDUA, the proposed use will be situated within the Mauna Kea Science Reserve that is within Resource subzone on Hawai'i Island. Specifically, the Project will be located in Area E (site 13N) (Exhibit A-68; Exhibit A-48 at IX-25, Figure IX-15/16) in the Northern Plateau, which is outside of the Kūkahau'ula summit area. The construction of astronomy facilities is a permitted use of the Resource subzone, and in fact, the land at the summit

of Maunakea that is within the Resource subzone is the site of many existing astronomical observatories. Therefore, the TMT project will be compatible with existing land uses in the area.

Locating the TMT project in Area E will result in less than significant impact on historic properties, identified cultural properties, as well as viewplanes, species habitat and existing facilities. See Exhibit A-48 at IX-25, Figure IX- 15/16. In addition to this, locating the TMT project in Area E avoids any substantial impact to any pu‘u on Maunakea, including Kūkahau‘ula. See Exhibit A-48 at IX-25, Figure IX-15/16. The TMT project’s observatory dome will also be coated with a reflective aluminum-like finish which reflects the colors of the sky and ground, helping the dome to blend in with the surrounding setting. This is intended to mitigate the project's visual impacts. Furthermore, because the TMT project will be purposely located at a lower elevation than most of the other observatories on Maunakea, the TMT Observatory will not be visible from the significant historic properties of Lake Waiau and Pu‘u Līlīnoe.

Based on all of this, the proposed TMT project is compatible with the locality and surrounding areas and is appropriate to the physical conditions and capabilities of the area.

VI. The Project Preserves the Natural Beauty and Open Space Characteristics of the Physical and Environmental Aspects of the Land (HAR § 13-5-30(c)(6))

The University envisions a future of sustainable and responsible astronomy on the summit of Maunakea. This includes the decommissioning and deconstruction of observatories, site recycling, and the siting of observatories in certain areas so as to minimize the effects of development. The University recognizes that future plans for Maunakea require balanced management to preserve, protect, and enhance the cultural and natural resources of Maunakea. The long-term goal is to eventually have fewer observatories in the summit region, while maintaining Maunakea’s status as a world class center for education and research.

The TMT project does involve placement of a new structure within the Resource subzone in an area where one did not previously exist. The TMT Observatory will be in an area that

contains 11 other observatories and thus, will be consistent with the existing physical and environmental characteristics of the area. Furthermore, as detailed throughout the CDUA, the TMT Project contains measures to preserve the physical and environmental attributes of the area: (i) the project is being proposed for Area E on the Northern Plateau of Maunakea, intentionally away from more sensitive areas of Maunakea; (ii) the TMT project will not be visible from the summit of Maunakea or from Lake Waiau but will be visible from within the Northern Plateau as well as the northern ridge of Kūkahau‘ula, where other astronomical facilities are located and are visible; and (iii) views from the northern ridge of Kūkahau‘ula are already dominated by other astronomical facilities including Subaru, Keck, and the Canada-France-Hawai‘i observatory.

Several other aspects of the TMT project are also worth noting in this regard. First, due to the TMT project’s design, the observatory will be at a lower elevation than the other existing observatories, thereby moderating its importance. Second, the observatory dome has been consciously designed to minimize the observatory’s visibility. Third, it will not block the view of Maui from the northern ridge. Finally, the Access Way for the TMT project incorporates design components that are intended to mitigate visual impacts, including the coloring of pavement (where used) to better blend with the surroundings. Thus, while it will add a visual element to the Northern Plateau that is not currently there, the addition represents a modest incremental change to the Resource subzone.

The visual analyses conducted for the project (see, for example, Section 3.5 of the FEIS for the TMT project) indicate that from outside of the Maunakea summit area, the TMT project will be visible to approximately 15 percent of the Hawai‘i island population, the great majority of whom already have a view including one or more observatories. This includes views from the town of Waimea and along portions of Highway 250. In the context of the existing observatories and the fact that the TMT project will not obstruct existing views, its visual impact is less than

significant. Furthermore, as previously discussed, TIO intends to implement several mitigation measures to reduce the impact on natural resources. Those same measures will also preserve, if not improve upon, the natural beauty of the area.

VII. Subdivision of Land Increasing the Intensity of Land Uses in the Conservation District (HAR § 13-5-30(c)(7))

No land will be subdivided in order to construct and operate the TMT project.

VIII. The Proposed Land Use Will Not Be Materially Detrimental to the Public Health, Safety and Welfare (HAR § 13-5-30(c)(8))

As detailed in the FEIS, in the CDUA, and in the testimony of others who are appearing before you, the TMT project has been designed and will be operated in a manner intended to preserve and protect public health, safety, and welfare. The following briefly summarizes some of the measures TIO has committed to implement to achieve these goals:

- **Sanitary Wastewater:** The TMT facilities will use a zero-discharge sanitary waste system at the project site. All sanitary wastewater will be collected, held in tanks designed for that purpose, and transported off the mountain for treatment and disposal at facilities approved by the State of Hawai'i Department of Health.
- **Solid Waste:** All solid waste will be collected and stored indoors in closed trash containers and will be disposed of appropriately off of Maunakea. TIO has committed to developing and implementing a Waste Minimization Plan and Materials Storage/Waste Management Plan and to implementing recycling measures to reduce and appropriately manage solid waste disposal.
- **Hazardous Materials:** In handling all hazardous materials, TIO will comply with existing federal and state laws. In addition, hazardous materials will be stored in areas with secondary containment that will capture any material that may accidentally escape the primary storage unit. TIO will utilize Environmental Protection Agency-licensed contractors to transport any hazardous waste off site to be disposed of appropriately.
- **Mirror Washing Wastewater:** Although not hazardous, mirror washing wastewater will be treated in a manner similar to hazardous waste; it will be stored in units with

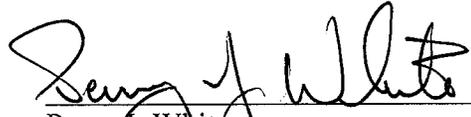
secondary containment and will be transported off-site for appropriate treatment and disposal.

- Noise: TIO will implement various measures to control and mitigate noise emanating from the Observatory, including containing heating, ventilation, and air conditioning equipment indoors, and implementing other measures to reduce the amount of operational noise from the TMT Observatory.

As detailed above and more fully detailed in the TMT CDUA and FEIS, the TMT project has been designed, will be operated, and will implement various measures to ensure that the long-term impacts of the project will be brought to moderate, minor, or even negligible levels. The proposed project meets the eight criteria under HAR § 13-5-30(c). In view of this, I believe that it would appropriate for the Board to approve the CDUP for the project.

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DATED: Honolulu, Hawai'i, October 11, 2016.

A handwritten signature in black ink, appearing to read "Perry J. White", written over a horizontal line.

Perry J. White
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Inc.