This section describes wildfire risks and hazards that would be exacerbated by the Los Angeles Zoo Vision Plan (Vision Plan) in the City of Los Angeles (City). A wildfire, also known as a wildland fire, is an uncontrolled and destructive fire in a forest, grassland, or brushland. Wildfires can be both naturally occurring and manmade and typically ignite during droughts and periods of hot, dry weather when vegetation becomes dry and more highly flammable. Lightning, vehicle or equipment operation, landscape maintenance, burning campfires, cigarettes, arson, downed power lines, and even the sun can ignite wildfires. This analysis describes the physical setting for wildfire and the regulations that apply to wildfire management, emergency response and access. Impact analysis assesses the risk of exposure to wildfire or post-fire hazards.

### 3.17.1 Environmental Setting

#### Regulatory Setting

State and local regulations have been enacted to address wildfire risks and hazards in the wildfire-prone areas of the City. There are no federal regulations that pertain to wildfire hazards or response. Federal regulations that apply to fire protection services is provided in Section 3.13, Public Services.

#### State Regulations

**State Department of Forestry and Fire Protection (CAL FIRE)**

The California Department of Forestry and Fire Protection (CAL FIRE) serves and safeguards the people and protects the property and resources of over 31 million acres of California’s privately-owned wildlands within the State Responsibility Area (SRA). CAL FIRE foresters and fire personnel work closely with other agencies to encourage and implement fuels management projects to reduce the threat of uncontrolled wildfires. CAL FIRE provides varied emergency services in 36 of the State’s 58 counties via contracts with local governments. CAL FIRE’s Fire Prevention Program consists of multiple activities including wildland pre-fire engineering, vegetation management, fire planning, education and law enforcement. Typical fire prevention projects include brush clearance, prescribed fire, defensible space inspections, emergency evacuation planning, fire prevention education, fire
hazard severity mapping, and fire-related law enforcement activities. CAL FIRE’s mission emphasizes the management and protection of California’s natural resources; a goal that is accomplished through ongoing assessment and study of the state’s natural resources and an extensive CAL FIRE Resource Management Program (FRAP). FRAP publishes several maps to inform planning and emergency response programs at state and local levels, including statewide maps of:

- **Fire Hazard Severity Zones** – indicates the entirety of the Project site and Griffith Park lies within a Very High FHSZ in an LRA that extends from Griffith Park west and southeast from the Project site, generally aligning with the Santa Monica Mountain range. FHSZ are defined per Government Code Sections 51175 - 51189.

- **Fire Threat** – identifies the Project site and vicinity with a range of moderate, high, and very high fire threat. Fire threat provides a measure of fuel conditions and fire potential in the ecosystem, representing the relative likelihood of “damaging” or difficult to control wildfire occurring for a given area.

- **Wildland-Urban Interface (WUI)** – identifies portions of the Project site and Griffith Park as a WUI Influence Zone, where vegetation is susceptible to wildfire, and Interface Zone, where dense housing adjacent to vegetation can burn in a wildfire.

- **Communities at Risk from Wildfire** – generally identifies the cities of Glendale and Burbank to the east of the Zoo across the Los Angeles River and I-5 corridor and the Los Feliz neighborhood to the south of Griffith Park as Communities at Risk from Wildfire. Communities at Risk are communities which are identified as having some lands at high risk of house/structure damage from wildfire. These high-risk communities are within the WUI, the area where homes are close enough to wildland vegetation to be within fire’s reach, defined here as within 0.5 to 1.5 miles of areas of High or Very High wildfire threat.

**California Fire Code**

The *California Fire Code* (CFC) is Part 9 of thirteen parts of the official building regulations to the *California Code of Regulations*. This code is also referred to as Title 24, or the *California Building Standards Code*. The Code establishes the minimum requirements consistent with nationally recognized good practices to safeguard public health, safety and general welfare from fire and other hazards in new and existing buildings, structures and premises, and to provide safety and assistance to firefighters and emergency responders during emergency operations. The CFC applies to the construction – including presence of fire service features and fire apparatus access roads – alteration, movement, enlargement, replacement, repair, equipment, use and occupancy, means of egress, evacuation plans, location, maintenance, removal and demolition of every building or structure or any appurtenances connected or attached to such building structures throughout the state.

**California Fire Plan**

The California Fire Plan is a cooperative effort between the State Board of Forestry and Fire Protection and CAL FIRE. The plan serves as the state’s road map for reducing the risk of wildfire by placing the emphasis on preventive action before a fire starts, the Fire Plan looks
to reduce firefighting costs and property losses, increase firefighter safety, and to contribute to ecosystem health. Eight goals outlined by the fire plan include:

1. Identify and evaluate wildland fire hazards and facilitate the collaborative development and sharing of such analyses and data collection.
2. Promote and support local land use planning processes as they relate to protection from wildfire and land owner responsibility.
3. Support and participate in the collaborative development and implementation of local, county and regional plans that address fire protection and landowner objectives.
4. Increase fire prevention awareness, knowledge and actions implemented by individuals and communities to reduce human loss, property damage and impacts to natural resources from wildland fires.
5. Integrate fire and fuels management practices with landowner/land manager priorities across jurisdictions.
6. Determine the level of resources necessary to effectively identify, plan and implement fire prevention using adaptive management strategies.
7. Determine the level of fire suppression resources necessary to protect the values and assets at risk identified during planning processes.
8. Implement post-fire assessments and programs for the protection of life, property, and natural resource recovery.

**Government Code (GC) Section 51175 - 51189**

*Government Code* Section 51175-51189 designates responsibility to local agencies to identify areas in the state as Very High Fire Hazard Severity Zones (FHSZ) falling under local protection with the Local Responsibility Area (LRA). Classification of Very High FHSZ must be consistent with statewide criteria. Designation of Very High FHSZ is based on fuel loading, slope, fire weather, and other relevant factors, including winds identified as causing wildfire spread. Once identified, information on Very High FHSZ is mapped and made available to the public. The CAL FIRE director periodically reviews the LRA, and as necessary, makes recommendations relative to the designated of Very High FHSZ. This section also outlines brush clearance and defensible space maintenance for buildings in the FHSZ, as well as the necessary permit process for building construction and reconstruction. CAL FIRE provides guidance on fuels management and defensible space requirements.

**Public Resources Code (PRC) Sections 4201-4204**

This section directs CAL FIRE to map areas of significant fire hazards, known as fire hazard severity zones, within state responsibility areas. Classification is based on fuels, terrain, weather, and other relevant factors. The director of CAL FIRE shall designate, and review and revise as necessary, fire hazard severity zones and assign to each zone a rating reflecting the degree of fire hazard severity expected to prevail in the zone.
Public Resources Code (PRC) Section 4290

This section requires adoption of minimum fire safety standards related to defensible space that are applicable to SRA lands under the authority of CAL FIRE, and to lands classified and designated as Very High FHSZ, as defined in subdivision (i) of Section 51177 of the Government Code. These regulations apply to the perimeters and access to all residential, commercial, and industrial building construction within SRAs approved after January 1, 1991, and within lands classified and designated as Very High FHSZ, as defined in subdivision (i) of Section 51177 of the Government Code after July 1, 2021. The regulations shall include all of the following:

1. Road standards for fire equipment access.
2. Standards for signs identifying streets, roads, and buildings.
3. Minimum private water supply reserves for emergency fire use.
4. Fuel breaks and greenbelts.

On and after July 1, 2021, regulations for fuel breaks and greenbelts near communities shall be updated to provide greater fire safety for the perimeters to all residential, commercial, and industrial building construction within SRA and lands classified and designated as Very High FHSZ, as defined in subdivision (i) of Section 51177 of the Government Code, after July 1, 2021. These regulations shall include measures to preserve undeveloped ridgelines to reduce fire risk and improve fire protection.

Public Resources Code (PRC) Section 4291

This section requires a person who owns, leases, controls, operates, or maintains a building or structure in, upon, or adjoining a mountainous area, forest-covered lands, brush-covered lands, grass-covered lands, or land that is covered with flammable material shall maintain defensible space of 100 feet from each side and from the front and rear of the structure. Fuels shall be maintained in a condition so that a wildfire burning under average weather conditions would be unlikely to ignite the structure. The intensity of fuels management may vary within the 100-foot perimeter of the structure, the most intense being within the first 30 feet around the structure. A greater distance may be required by state law, local ordinance, rule, or regulation. Clearance beyond the property line may only be required if the state law, local ordinance, rule, or regulation includes findings that the clearing is necessary to significantly reduce the risk of transmission of flame or heat sufficient to ignite the structure, and there is no other feasible mitigation measure possible to reduce the risk of ignition or spread of wildfire to the structure. Clearance on adjacent property shall only be conducted following written consent by the adjacent landowner. Here, “fuel” means any combustible material, including petroleum-based products and wildland fuels. This section does not apply to single specimens of trees or other vegetation that are well-pruned and maintained so as to effectively manage fuels and not form a means of rapidly transmitting fire from other nearby vegetation to a structure or from a structure to other nearby vegetation.
Public Resource Code (PRC) Section 4119

PRC Section 4119 authorizes the U.S. Forest Service (USFS), the U.S. Department of the Interior Bureau of Land Management (BLM), and CAL FIRE to inspect properties to determine whether they comply with state forest and fire laws, regulations, or use permits. The inspector should note all violations in writing and provide a reasonable time limit for compliance considerate of time estimates for work required.

Public Resource Code (PRC) Section 4292

PRC Section 4292 requires that a firebreak of at least 10 feet be maintained in the circumference area of a pole or tower that supports switch, fuse, transformer, lightning arrester, line junction, or dead end or corner pole.

Public Resource Code (PRC) Section 4427

PRC Section 4427 limits the use of any motor, engine, boiler, stationary equipment, welding equipment, cutting torches, tar pots, or grinding devices from which a spark, fire, or flame may originate, when the equipment is located on or near land covered by forest, brush, or grass. Before such equipment may be used, all flammable material, including snags, must be cleared away from the area around such operation for a distance of 10 feet. A serviceable round point shovel with an overall length of not less than 46 inches and a backpack pump water-type fire extinguisher, fully equipped and ready for use, must be maintained in the immediate area during the operation.

Public Resource Code (PRC) Section 4428

PRC Section 4428 limits industrial operations powered by an internal combustion engine operated on hydrocarbon fuels on or near any land covered by forest, brush, or grass between April 1 and December 1, or other times when ground litter and vegetation would sustain spread of fire. Such operations must provide and maintain, for firefighting purposes only, suitable and serviceable tools in the following amounts, manner, and locations:

- A sealed fire toolbox must be located in the operating area, at a point accessible in the event of fire. The fire toolbox must contain a backpack pump-type fire extinguisher filled with water, two axes, two McLeod fire tools, and enough shovels for each employee at the operation to be equipped to fight fire.
- One or more serviceable chainsaws must be immediately available in the operating area, or in the alternative, a full set of timber-felling tools must be located in the fire toolbox.
- Each passenger vehicle used must be equipped with a shovel and an ax, and any other vehicle used must be equipped with a shovel. Each tractor used must also be equipped with a shovel.
Public Resource Code (PRC) Section 4431

PRC Section 4431 limits use of a portable saw, auger, drill, tamper, or other portable tool powered by a gasoline-fueled internal combustion engine on or near any forest-covered land, brush-covered land, or grass-covered land. Such operations must maintain a clearance zone of at least 25 feet from flammable material. A serviceable round point shovel or fire extinguisher must be present within 25 feet of the tool in use.

Government Code Section 66474.02

In 2012, Senate Bill 1241 added Section 66474.02 to Title 7 Division 2 of the Government Code, commonly known as the Subdivision Map Act. The statute prohibits subdivision of parcels designated within Very High FHSZ, or that are in the SRA, unless certain findings are made prior to approval of the tentative map. The statute requires that a city or county planning commission make three new findings regarding fire hazard safety before approving a subdivision proposal. The three findings are, in brief: (1) the design and location of the subdivision and its lots are consistent with defensible space regulations found in the California Public Resources Code (PRC) Section 4290-91, (2) structural fire protection services will be available for the subdivision through a publicly funded entity, and (3) ingress and egress road standards for fire equipment are met per any applicable local ordinance and PRC Section 4290.

Local Regulations

City of Los Angeles Fire Code


Section 503 defines standards for the provision, maintenance, installation, dimensions, and other specifications of fire apparatus access roads. Fire apparatus access roads shall extend to within 150 feet of all portions of a facility and have an unobstructed width of at least 20 feet. Access roads shall be designed and maintained to support the imposed loads of fire apparatus under all weather conditions.

Section 3301-3317 outlines fire safety guidelines regarding construction and demolition. During construction the project site must provide or maintain vehicle access for firefighting, water supply, standpipes, portable fire extinguishers, and maintain of existing stairways. The section also provides safeguards regarding the storage and handling of flammable and combustible liquids, flammable gases, explosive materials roofing operations, motorized construction equipment, temporary heating equipment, and combustible debris, rubbish and waste.

Section 4908 establishes Very High FHSZ and codes regulating and prohibiting certain activities within designated FHSZ.
Section 57.322 states owners of property located within a Very High FHSZ must maintain all native brush, weeds, grass, trees and hazardous vegetation within 200 feet of any structures/buildings and within 10 feet of any combustible fence or roadway/driveway used for vehicular travel. Maintenance requirements specify acceptable height and/or volume of grasses, brush, trees and shrubs, acceptable clearance distance requirements between vegetation and roofs and chimneys, and general tree maintenance. Dead trees, shrubs, undergrowth, palm fronds, and branches must be removed from the clearance zone.

**Los Angeles Fire Department Strategic Plan**

The City of Los Angeles Fire Department’s (LAFD) Strategic Plan outlines goals and strategies to improve fire protection throughout the City. Goals and relating strategies relevant of wildfire include:

- Goal 1: Provide Exceptional Public Safety and Emergency Service
  - Strategy 3: Improve fire suppression services.
  - Strategy 5: Prepare for large scale disasters.
  - Strategy 6: Ensure and optimal state of readiness focusing on terrorism and disaster preparedness.

**City of Los Angeles Emergency Operations Plan**

The City’s Emergency Management Department maintains and leads the citywide emergency plans, revises and distributes the Emergency Operations Plan and Master Procedures and Annexes and updates and disseminates guidelines for the emergency response and recovery plans. The Emergency Management Department also reviews and tests departmental emergency plans to ensure City departments are ready to fulfill their respective emergency missions. These annexes identify roles, responsibilities and required actions for various City departments, particularly LAFD, the Los Angeles Police Department and in some cases, the Zoo Department. Annexes that are particularly relevant to the Zoo and wildfire hazards include the Brushfire Annex, the Early Warnings and Notifications Annex, the Evacuations Annex, and the Mass Care and Sheltering Annex - Large Animal Support Appendix. These annexes address brush fire emergency response, notifications and warnings, evacuation guidelines and care or sheltering of large animals, including those from the Zoo. Every other year, the Emergency Management Department – Planning Division leads a formal review of the Emergency Operations Plan departments and agencies that are identified within each Annex, as well as any other departments or agencies that may need to be part of the review process. If, at any time, a department, agency, or stakeholder to the Emergency Operations Plan changes, develops, or amends any policy, procedure, or operation that will change or affect the contents, that entity is to immediately notify the Emergency Management Department—Planning Division.
Los Angeles Zoo Fire Preparedness, Response, and Emergency Evacuation Plans

The Zoo Safety and Administrations Offices maintain the *Los Angeles Zoo Procedure Manual*. This document includes the Zoo’s Fire Preparedness and Response Plan and Zoo Staff and Volunteer Evacuation Plan, most recently updated in April 2017. Together, these plans described procedures for the Zoo to implement in preparation for a fire or in response to a fire incident. These plans address or outline the following procedures:

- Lines of command and communication;
- Notification of a fire incident;
- Identification of Zoo and LAFD incident commanders;
- Responsibilities of Zoo departments;
- Zoo employee and visitor evacuation instructions;
- Staff evacuation meeting location in the Zoo’s southern parking lot; and
- Animal collection, immobilization, crating, relocation, and evacuation, including California Condor Evacuation Procedures. If it is necessary to relocate animals off Zoo grounds, they shall be transported to the Magnet School parking lot.

Zoo Security Division has primary responsibility for carrying out an evacuation under the direction of the Zoo Incident Commander with assistance as needed from other divisions (e.g., Animal Care Division, Admissions, Visitor Services).

City and County of Los Angeles Disaster Route Maps

Disaster Routes are freeway, highway or arterial routes pre-identified for use during times of crisis. These routes are utilized to bring in emergency personnel, equipment, and supplies to impacted areas in order to save lives, protect property and minimize impact to the environment. During a disaster, these routes have priority for clearing, repairing and restoration over all other roads. Disaster Routes are not evacuation routes. Although an emergency may warrant a road be used as both a disaster and evacuation route, they are completely different. An evacuation route is used to move the affected population out of an impacted area. The County of Los Angeles (County) has designated disaster routes that are used to bring emergency personnel, equipment, and supplies to impacted areas. These include the Interstate 5 (I-5) and State Route 134 (SR-134) in the Project vicinity, which are designated primary disaster routes (Los Angeles County Department of Public Works 2012). San Fernando Road located 0.53 miles east of Project site, is designated a secondary disaster route by the County. The City of Los Angeles (City) also designates these same roads as disaster routes.

Draft Department of Recreation and Parks Standard Operating Procedure Griffith Park Emergency Operations

This Standard Operating Procedure (SOP) provides guidance and procedures for the coordination of the Department response during emergency operations in Griffith Park. The
SOP identifies RAP sections of Griffith Park, including the Zoo. The SOP establishes that the RAP Operations Section Chief shall be a park ranger and shall communicate with sections if necessary, including emergency notifications and how and where a Mobile Command Post (MCP), shall be set up. Under direction of RAP OSC, Operations Section will coordinate traffic control, evacuation routes, information distribution, wayfinding and other objectives as directed by the RAP OSC. These procedures have not been adopted and are subject to change.

**Existing Conditions**

**Regional Setting**

Los Angeles County encompasses a land area of 4,000 square miles. Nearly 47 percent of this area is mountainous, while the remainder consists of alluvial valleys, coastal plains, and high desert. The mountain ranges within the County generally run from east to west. These areas are referred to as “fire corridors” due to the high frequency and risk of fires. Prominent fire corridors in Los Angeles County include Malibu, Arroyo Seco, and San Gabriel Canyons (County of Los Angeles Fire Department 2019).

Wildfire season in California historically occurs in the late summer and autumn months, after summer climate has dried vegetation into flammable and combustible fuel and seasonal inland winds blow towards the coast (e.g. Diablo and Santa Ana winds). The seasonal Santa Ana winds cross Los Angeles County between October and March annually. Originating as cool/drier air masses over the Great Basin between the Sierra Nevada and Rocky Mountains, the Santa Ana winds develop as the air masses descend, compress and heat up adiabatically through the mountain passes, towards coastal areas and the Pacific Ocean. The San Gabriel Mountains serve as a barrier between the Mojave Desert and coastal regions. The main canyon drainages flow north and south, with a limited number of mountain passes to channel air flow. This natural topography controls airflow patterns linking the western Mojave Desert with the Pacific Ocean which the Santa Ana winds develop (County of Los Angeles Fire Department 2019). As the winds flow downslope through the passes, the air becomes compressed and warmer and wind speeds dramatically increase. By the time the winds reach coastal Southern California, they have become hotter, drier, and faster moving with the potential to dry out dormant and dead vegetation and will quickly spread wildfire flames.

Recent trends indicate fire season in California is starting earlier and ending later, with the length of fire season increasing by 75 days across the Sierras. A primary driver of expanded fire seasons appears to be climate change. Warmer temperatures, reduced snowpack, and earlier spring snowmelt create longer and more intense dry seasons that make vegetated areas more susceptible to severe wildfire (CAL FIRE 2019a). Other factors exacerbating wildfire risk in California include a widespread tree mortality epidemic due to insect infestations and drought as a result of climate change, and structural development expanding into areas bordering wildlands, locations referred to WUIs. California experienced the deadliest and most destructive wildfires in its history in 2017 and 2018 (CAL FIRE 2019a), including the Thomas Fire in Ventura and Santa Barbara Counties, the Tubbs Fire in Napa County, and the
Camp Fire in Butte County. As of November 2019, CAL FIRE has reported 6,190 fire incidents occurring in 2019, an estimated 198,392 acres burned, damage to 732 structures, and 3 confirmed fatalities (CAL FIRE 2019a).

**Historic Wildland Fires in City of Los Angeles**

Los Angeles County, including portions of the City, supports large areas of undeveloped wildlands such as those within the San Gabriel and Santa Monica Mountains, including Griffith Park, which also include WUI areas. These wildlands have a history of periodic wildfires, including more than 48 recorded major wildfires in the County over the last century. Wildland fires are a naturally recurring event in Southern California and the City. However, recent decades have witnessed greater impacts and severity of damage from wildfires, and this trend is only expected to increase further with climate change, population growth, and expanding development (Safford & Van de Water 2014; Yufang 2015). In 2017, LAFD responded to the La Tuna Canyon Fire, the largest brush fire within the City in 50 years, burning 7,194 acres through the Verdugo Mountains and destroying five homes. Three months later, the Creek Fire in Kagel Canyon and the Skirball Fire along the I-405 Freeway burned simultaneously. Combined damage from these two fires included 78 homes destroyed or damaged (LAFD 2018).

**Historic Wildfires in Griffith Park**

Since 2012, the LAFD has responded to 18 brush and grass fires in the Project vicinity (see Table 3.17-1). Historically, the first recorded wildfire was the Griffith Park Fire of 1933. On October 3, 1933, a fire began near the Mineral Wells area, located immediately west of the Project site. The 1933 fire burned 47 acres and killed 29 people, making it the second deadliest wildfire in the City's history (Collins Sullivan 2007). Nearly 30 years later on May 12, 1961, a fire in the southern area of Griffith Park burned 814 acres. More recently, on May 8, 2007, a fire burned 817 acres in the southeastern quadrant of Griffith Park. The 2007 fire required over 200 firefighters, multiple helicopters, and two fixed-wing aircrafts to aerial drop water, and resulted in the overnight evacuation of approximately 300 people in the nearby Los Feliz neighborhood (Archibold 2007; Neuman 2007). Several trails throughout Griffith Park and in the proximity of the Zoo were severely damaged by the fire. No Zoo animals were harmed but the proximity of the fire to the Zoo resulted in most animals being safely moved into their holding quarters.
Table 3.17-1. Recent Fires in the Project Vicinity

<table>
<thead>
<tr>
<th>Date</th>
<th>Fire Type</th>
<th>Location</th>
<th>Distance from Project Site</th>
</tr>
</thead>
<tbody>
<tr>
<td>7/12/2013</td>
<td>Brush</td>
<td>4700 W Zoo Drive</td>
<td>&gt; 0.1 miles N</td>
</tr>
<tr>
<td>4/30/2014</td>
<td>Brush</td>
<td>5600 W Zoo Drive/ N Griffith Park Drive</td>
<td>&gt;0.1 miles NW</td>
</tr>
<tr>
<td>3/30/2015</td>
<td>Brush</td>
<td>6000 W Riverside Drive/ W Zoo Drive</td>
<td>--</td>
</tr>
<tr>
<td>10/25/2015</td>
<td>Grass</td>
<td>NB I-5/ Zoo Drive</td>
<td>0.14 miles E</td>
</tr>
<tr>
<td>10/29/2015</td>
<td>Grass</td>
<td>I-5, Zoo Drive</td>
<td>0.14 miles E</td>
</tr>
<tr>
<td>12/01/2015</td>
<td>Brush</td>
<td>05202 W Zoo Drive</td>
<td>0.6 miles NW</td>
</tr>
<tr>
<td>7/01/2016</td>
<td>Grass</td>
<td>5638 W Forest Lawn Drive/ W Zoo Drive</td>
<td>1.06 miles NW</td>
</tr>
<tr>
<td>7/25/2018</td>
<td>Brush</td>
<td>5638 W Forest Lawn Drive/ W Zoo Drive</td>
<td>1.06 miles NW</td>
</tr>
<tr>
<td>11/11/2016</td>
<td>Brush</td>
<td>5336 N Crystal Springs Drive/ W Zoo Drive</td>
<td>0.21 miles SE</td>
</tr>
<tr>
<td>11/18/2016</td>
<td>Grass</td>
<td>I-5/ Zoo Drive</td>
<td>0.14 miles E</td>
</tr>
<tr>
<td>3/16/2017</td>
<td>Grass</td>
<td>5217 W Zoo Drive</td>
<td>0.61 miles NW</td>
</tr>
<tr>
<td>9/02/2017</td>
<td>Grass</td>
<td>I- 5/ Zoo Drive</td>
<td>0.14 miles E</td>
</tr>
<tr>
<td>11/20/2017</td>
<td>Brush</td>
<td>5333 W Zoo Drive</td>
<td>&gt;0.1 miles W</td>
</tr>
<tr>
<td>11/09/2018</td>
<td>Brush</td>
<td>194 Griffith Park Drive</td>
<td>0.1 miles W</td>
</tr>
<tr>
<td>11/12/2018</td>
<td>Brush</td>
<td>5400 W Zoo Drive/ W Riverside Drive</td>
<td>0.1 miles N</td>
</tr>
</tbody>
</table>

Source: LAFD 2019a, 2019b.

Most recently, the November 9, 2018 brush fire was the fourth major (i.e., greater than 10 acres) wildfire in Griffith Park (Cooper & Mathewson 2009). This brush fire occurred immediately adjacent to the Zoo, approximately half a mile behind western end of the Zoo (LAFD 2019a). The fire was reported at approximately 7:10 AM. Due to the surrounding terrain, fire response teams were initially unable to see the fire to provide an acreage estimate and had to hike to the fire location. Fire engines were unable to reach the fire location due to the steep terrain and lack of access roads, and fire helicopters and air support were deployed. Shortly after, the Zoo closed operations, although no animal evacuations were initiated. Firefighting personnel were able to utilize the Zoo and its perimeter roads as staging areas and points of access to the surrounding areas to suppress the fire and monitor for hot spots or flare ups. The fire was fully extinguished by a crew of over 120 firefighters in the late afternoon after reaching a size of approximately 30- acres. Heavy brush, steep slopes, and difficult-to-navigate terrain contributed to the fire’s growth and the difficulty of extinguishing the fire early on.

In response to the November 9, 2018 wildfire, Zoo staff began evacuation or relocation of some animals, including crating some small primates and moving birds from the Bird Show.
exhibit into an indoor classroom and the Zoo parking areas to protect their sensitive lungs from the smoke of the nearby wildfire. Because of the difficulty of moving large animals such as elephants, these were sheltered in place inside existing exhibits or structures. Zoo staff were able to assist firefighting personnel by activating the existing perimeter sprinkler system to soak potentially flammable vegetation along the Zoo’s fence line. Evacuation of Zoo patrons was not required as the Zoo had not yet opened and remained closed when the potential wildfire threat was imminent. The fire caused no damage to Zoo facilities or exhibit animals and animals were returned to their cages/exhibits the following day.

Wildland Fire Management and Firefighting Strategies

When a wildfire occurs, an important factor for life, property, and the environment comes from passive protection measures, such as defensible space, fire-resistive landscaping, and fire-resistive construction. The sum effect of passive protection measures substantially increases the effectiveness of fire suppression activities. Inadequate water supply, ingress and egress, structural safeguards, or vegetation management are key factors that lead to major structural-related fire losses in areas adjacent to wildlands (Cohen 1999). In addition, the inability of residents to shelter-in-place can also create evacuation and fire department access problems in these areas (U.S. Forest Service 2000).

Typical strategies for managing wildland fire hazards involve three parts: ongoing fuel management, fuel reduction near structures, and suppression of active fires. Fuel management includes removal of dried vegetation, creation of fuel breaks where vegetation is managed to slow or control a fire, and conducting prescribed burns. Fuel modification reduces the radiant and convective heat generated by wildfire and provides valuable defensible space for firefighters to take an effective stand against an approaching wildfire front and firebrands (i.e., ember showers).

The City of Los Angeles Department of Recreation and Parks (RAP) provides fuel modification services within Griffith Park. This includes brush clearance activities around access roads and trails maintained by RAP, including the Condor and Skyline trails surrounding the Zoo, to maintain a minimum 10-foot fire buffer. While these strategies may be effective in slowing or preventing the spread of large fires and reducing risk to life and structures, they may also fragment and damage ecosystems and cause visual changes in the process (Los Angeles County Fire Department, 2012).

Project Site and Vicinity

Fire Hazard Severity Zones (FHSZ)

The Zoo lies within and adjacent to wildland areas of Griffith Park that are exposed to potential wildfire hazards. CAL FIRE has mapped areas of significant fire hazards in the state through its Fire and Resources Assessment Program (FRAP). These maps classify FHSZ based on a hazard scoring system. This system considers criteria for fuels, fire history, terrain influences, housing density, and occurrence of severe fire weather where an urban
conflagration could result in catastrophic losses. As part of this mapping system, land where CAL FIRE is responsible for wildland fire protection and generally located in unincorporated areas is classified as a SRA. Where local fire protection agencies are responsible for wildfire protection, the land is classified as an LRA. CAL FIRE currently identifies the Project site as a LRA and designates the majority of Griffith Park and all of the Project site as a Very High FHS zone (CAL FIRE 2011).

**Slope & Topography**

Topography strongly influences wildfire behavior and slope conditions can become a critical wildfire risk factor. Conditions such as the length and steepness of slopes, direction of exposure, and ruggedness of terrain influence potential wildland fire intensity, behavior, the rates at which such fires may spread, and firefighter access.

The most important factors are the influences of slope steepness and prevailing wind direction on the speed at which a fire may spread (Barros et al. 2013). As slope gradients increase, hand crews are less likely to be able to establish fire-containment lines due to the lack of accessibility and safety concerns. The development of spot fires ahead of fire-lines and the hazards of rolling and blowing ember showers become progressively more serious as slope increases. Flat terrain may still experience intense fire patterns depending on vegetation cover, structure, and other factors. For example, the 2017 Thomas Fire in Ventura traveled from rugged terrain north of Santa Paula to flatlands over within the City of Ventura, destroying over 1,063 structures in the process, many of them located within developed areas of Ventura’s downtown.

The Project site is located in the northeastern portion of Griffith Park, at the base of the foothills of the eastern Santa Monica Mountains. Griffith Park and portions of the Zoo includes terrain consisting of rocky hills, canyons, and gullies. The Project site encompasses areas of steep hillsides and canyons bordered by steep topography in the neighboring wildlands of Griffith Park with elevations ranging from approximately 384 to 1,625 feet above mean sea level (msl). The Project site is located along the border of and within steep hillsides and canyons in Griffith Park, with existing structures primarily occupying level canyon bottoms or lower elevation slopes within the Zoo’s interior.

The Project site includes moderate to steep slopes (i.e., 9 to 45 percent), especially in northern and southern undeveloped hillsides of the Zoo and along the western perimeter of the Project site. The steep slopes with chaparral vegetation that comprise portions of the Project site and
surrounding wildlands in Griffith Park contribute to the area’s designation as a Very High
FHZS. In addition, prevailing west and northwest winds average speeds of 9.5 miles per hour
(mph) (Western Regional Climate Center 2018). Thus, prevailing winds, steep slopes, and the
presence of dense, highly flammable vegetation within portions of the Project site and
surrounding Griffith Park present a substantial wildland fire hazard.

There are no delineated water features (i.e., blue line creeks, rivers, lakes) within the site or
immediate vicinity, but the Project site is located at the base of an approximately 80-acre
watershed that drains into the Zoo along the northern perimeter. Runoff from this watershed
is captured and conveyed through the Zoo’s existing stormwater management system (see
Section 3.10, Hydrology and Water Quality).

Firefighting Access

Firefighting access to the Zoo and bordering areas of Griffith Park is available via Zoo
Drive, Western Heritage Way, and Griffith Park Drive, which are all paved two- to four-
lane roads. Within the Zoo, an approximately 16-foot-wide paved road runs along the Zoo’s perimeter with adjacent wildlands of Griffith Park. This road provides access to areas of dense vegetation within the Zoo and serves as a fire break and line of defense for firefighters. Outside the Zoo, access to steep, heavily vegetated wildlands adjacent to the Zoo is limited to the Skyline and Condor trails, which are unpaved roads. Steep grades in places along these access routes may limit vehicular access for larger firefighting vehicles.

The Zoo supports firefighter access, patrol, and management for the LAFD with existing
access roads within the Zoo and staging areas for first responders. In response to recent
Griffith Park wildfires, LAFD used the Zoo parking lot for staging of command operations and
equipment. Brush patrols have been dispatched within the Zoo and have been capable of
monitoring wildfire movement, flare ups, or hot spots, while firefighting crews have been able
to establish fire breaks or defense lines and lay hoses around the Zoo’s perimeter. (Deputy
Chief Hogan, Commander of the LAFD West Bureau, personal communication, January 14,
2020). Simultaneously, limits to firefighting access is demonstrated by the November 9, 2018
brush fire that occurred within hillsides and canyons adjacent to the Zoo. Vehicular access
was limited by slope and hand crews and aerial support were required for fire suppression.
Vegetation Biomass and Fuel

The Zoo is immediately bordered to the north, west, and east by several hundred acres of chaparral, oak woodland, and coastal sage scrub habitats located within the surrounding hillsides, ridges, and canyons of Griffith Park (refer to Section 3.3, Biological Resources). Chaparral vegetation has flammable characteristics, including broad-leaved evergreen and sclerophyllic (i.e., small fine) leaves, forming dense thickets with lots of leaf litter, peeling bark, and volatile oils, all resulting in high intensity (i.e., long flame length) burn potential. Fire can spread rapidly through older growth chaparral, particularly when wind-driven (Borel, Valerie T., et al. 2009). In Southern California, chaparral fires have the potential to be large and devastating (County of Los Angeles Fire Department 2019). Coastal sage scrub and non-native annual grasslands are generally of shorter stature, and more open than chaparral and burns easily, fast, and more frequently. Oak woodlands are generally less flammable due to large spreading canopies that provide shade inhibiting the growth of more flammable species and making the understory area below, shady, cooler and more mesic (i.e., moist) (Borel, Valerie T., et al. SAFE, 2009). However, fallen dead oak leaves left on the ground can be a highly flammable fuel source for wildfires. These fire-prone plant communities exist in undeveloped areas of the Zoo and are also dense and widespread in adjacent hillside and canyons throughout Griffith Park.

Native vegetation within the Zoo primarily consists of coast live oak woodland, eucalyptus/mixed woodland, and laurel sumac shrubland (refer to Section 3.3, Biological Resources). Approximately 19 acres of undeveloped hillsides in the California and Africa planning areas within the Zoo support flammable non-native annual grassland, coastal sage scrub, chaparral, and oak woodland plant communities, as well as invasive and flammable, non-native eucalyptus trees distributed throughout. Approximately 13 acres of chaparral grows in a continuous strand of dense vegetation on Project site hillsides, creating a flammable landscape when ignited. There are almost 7 acres of oak woodlands within the Zoo. The Project site also supports over 13 acres of highly flammable eucalyptus groves. Eucalyptus trees are also scattered within the canyons and hillsides of Griffith Park.
adjacent areas of Griffith Park. Additional trees within the Zoo that may present biofuels for wildfires include other tree species such as cypress, pine, acacia, and the Mexican fan palm – especially if unmaintained (County of San Diego, Department of Planning and Land Use 2004; FireSafe MARIN, 2019). For description of area and extent of vegetation within the Zoo, please refer to Section 3.3, Biological Resources.

Zoo operations and development include potential sources of other non-vegetation fuels that may contribute to wildfire spread if ignited. Most Zoo buildings constructed recently have fire suppression systems (i.e., sprinklers), but older buildings such as service centers and storage buildings on the southwestern perimeter of the Zoo may not (see Zoo Fire Management and Evacuation Planning below). The Zoo also stores and uses flammable materials, including lumber, hay, and fuels such as the fueling station located at southwestern service area adjacent to the Zoo perimeter with Griffith Park. Additional information related to hazards and hazardous materials is available in Section 3.9, Hazards and Hazardous Materials, and details related to structural fire suppression and response is available in Section 3.13, Public Services.

Zoo Fire Management and Evacuation Planning

The Zoo maintains a vegetation fuel break along its approximately 1.5-mile long perimeter with the wildlands and flammable vegetation communities within Griffith Park. Maintenance for this fuel break and other brush clearance activities within the Zoo is carried out by Zoo groundskeeper staff in coordination with the LAFD. In the spring of each year, LAFD personnel walk the site with Zoo staff to identify areas of required maintenance or clearance along the perimeter and in undeveloped areas of the Zoo with any improvements necessary to ensure compliance with CFC and LAFD regulations. Zoo groundskeeper staff, with assistance from approved third-party landscaping contractors, conduct vegetation clearance around the entirety of the Zoo’s perimeter and interior undeveloped areas based on the requirements identified by LAFD, which involves the mowing, trimming, limbing, or chipping of grasses, shrubs, and trees within the fuel break and clearance areas. Due to steep terrain, the width of this buffer appears to range from 50 to 100 feet, although management of non-native annual grasses and understory may extend to a wider area.

The Zoo maintains perimeter sprinkler systems and water line available for fire suppression along the ridgeline of the California planning area capable of wetting down this perimeter during a wildfire event, as occurred during the November 9, 2018 wildfire (Tom LoVullo, Zoo Director of Construction and Maintenance, personal communication, January 8, 2020). Within the interior developed areas, the Zoo maintains a full network of fire hydrants throughout the Zoo along internal roads and pedestrian paths. All Zoo buildings are equipped with fire alarm systems, while newer structures are also equipped with fire sprinkler systems (Tom LoVullo, Zoo Director of Construction and Maintenance, personal communication, January 8, 2020). Smoking is also banned within the interior of the Zoo and permitted only in the parking lot.
In addition to these procedures, the Association of Zoos and Aquariums (AZA) requires its accredited members, including the Zoo, to have a written procedure for fire and environmental emergencies specific to the Zoo’s region, such as wildfires. In addition, staff at accredited zoos must run through at least one live-action emergency drill—a pre-planned simulation—each year for each category of emergency. These procedures and training address staff care or evacuation of animals and management and potential evacuation of zoo patrons. In compliance, the Zoo conducts live-action emergency and evacuation drills annually and maintains the *Los Angeles Zoo Procedure Manual*, which includes the Zoo’s Fire Preparedness and Response Plan and Zoo Staff and Volunteer Evacuation Plan.

The Zoo maintains communication with the LAFD regarding wildfire risks and response due to the number of visitors and animals that may be adversely affected. LAFD also communicates with the Zoo when new projects or development is occurring. Close coordination with the Zoo and other operators within Griffith Park and LAFD is also implemented to assess risks associated with high Griffith Park visitation, special events, construction, and other hazards. To maximize preparedness for wildfire incidents, LAFD strategically manages staff and resources at fire stations where fire risks may be exacerbated on high risk days. LAFD currently engages in pre-deployment on greater threat days (i.e., strong winds, red flag days) to move resources to stations around areas of concerns to better respond to any incidents if they should occur.

### 3.17.2 Impact Assessment Methodology

**Significance Thresholds**

According to Appendix G of the CEQA Guidelines, if located in or near SRA or lands classified as Very High FHSZ, would the project:

- a. Substantially impair an adopted emergency response plan or emergency evacuation plan;
- b. Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire;
- c. Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines, or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment; or
- d. Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes.

In addition to the thresholds identified in Appendix G of the CEQA Guidelines, the *2006 L.A. CEQA Thresholds Guide* states that determination of significance shall be made on a case-by-case basis after considering:
• If the Project impairs implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan; and
• If the Project exposes people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands.

**Methodology**

This analysis is supported by review of existing adopted plans, public databases, and recent studies, to assess potential impacts of wildfires to occur within the Project site and vicinity, including the *Los Angeles Zoo Procedure Manual*, which includes the Zoo’s Fire Preparedness and Response Plan and Zoo Staff and Volunteer Evacuation Plan. Additionally, information was gathered from the LAFD *Strategic Plan*, academic studies, Project site and vicinity information on file with the Zoo and RAP, and several personal communications with LAFD and Zoo staff regarding past wildfire incidents and LAFD response. Risk associated with wildfire is assessed based on CAL FIRE FHSZ mapping, assessment of the fuel biomass within and adjacent to the Project site, historic wildland fires in the vicinity, slope, winds, vegetation age and composition, and changes that may result after implementation of the Project.

To evaluate potential for post-fire impacts, such as debris flows, flooding, or slope instability, this section assesses impacts of the Project from its hydrologic setting and potential for landslide as a result of runoff, post-fire slope instability, or drainage changes, as evaluated also in Section 3.8, *Hydrology and Water Quality*.

**3.17.3 Environmental Impact Analysis**

**WF-1: Would the project impair an adopted emergency response plan or emergency evacuation plan?**

The Project involves expansion of visitor-serving and exhibit space into approximately 22 acres of undeveloped areas within the existing Zoo, including into hillside areas in the California and Africa planning areas that currently support flammable vegetation communities such as chaparral, coastal sage scrub, and grasslands. Over the phased implementation of the Project, annual visitation to the Zoo would increase by up to 1,265,200 guests and increase the maximum occupancy at any one time inside the Zoo to between 5,500 and 10,000 people (refer to Section 3.0, *Environmental Impact Analysis and Mitigation*). In the event of wildfire in Griffith Park, it is reasonable to assume that Zoo visitors and employees would evacuate the premises, mainly through the main entrance to the parking lot and consistent with the *Los Angeles Zoo Procedure Manual*. This would also generally be the case for any Zoo animals that are relocated either within the Zoo or to offsite locations, though alternate routes may be available from proposed service roads at the Gottlieb Animal Health Center or northeast of the proposed Condor Canyon accessway.
The Project involves redesign of internal access roads to separate visitor pathways from service and access roads (refer to Figure 2-14 and Figure 2-15). This redesign would change the existing evacuation routes and plans for visitors, employees, and Zoo animals and the options for firefighter access routes within the Zoo. The Project would also realign Crystal Springs Drive as an eastern perimeter road following the Zoo’s parking lots with improved access to the Zoo and through the Zoo to connect to Griffith Park Drive, which is an existing important access point for emergency response in Griffith Park. These changes would require updates to the Los Angeles Zoo Procedures Manual and the City’s Emergency Operations Plan and Annexes. Accordingly, the Project would potentially impair existing adopted emergency response and evacuation plans during phased construction and long-term operation, as discussed below.

**Construction**

The Project would involve demolition, excavation, and construction of roadways, pathways, and access routes both internal and external to the Zoo. In Phase 1, the Zoo’s southern parking lot would be redesigned to accommodate 300 additional spaces and would potentially not be accessible during construction, which would reduce the surface parking area available for wildfire response and staging on the Project site. The northern and main parking lots would remain available and provide area and accessibility for firefighting equipment and personnel similar to current conditions. Also in Phase 1, a portion of Crystal Springs Drive connecting to Griffith Park Drive would be excavated and realigned. Since these local roads provide direct firefighting access to the western and southern sides of the Zoo and the southeastern area of Griffith Park, construction has the potential to block or hinder emergency responders due to roadway condition and equipment. A construction traffic management plan would ensure uninterrupted access on external roads to avoid emergency response and evacuation impairment. The Project would not disrupt access to primary or secondary designated Disaster Routes along I-5, SR-134 and San Fernando Road as mapped by the County, retaining regional access for evacuation and emergency response.

Construction of internal improvements, including visitor-serving uses and internal circulation and access roads, would occur over seven phases where each phase would be completed prior to groundbreaking on the next phase. This proposed phasing plan would limit disruption or obstruction of access and evacuation routes within the Zoo. However, during Phase 1, the Zoo Entry and California planning areas would be under construction concurrently and closed to the public, which would impair both access and evacuation through the front gates. Also, throughout construction, internal rerouting and temporary closures of the proposed planning areas may block evacuation routes or cause circuitous or inefficient evacuation, as well as limit firefighter access to internal areas of the Zoo. To ensure visitors and employees are able to evacuate the Zoo during Project construction, a construction-phase Zoo circulation and access plan would ensure that an alternate entrance is available and clearly indicated and that visitors could proceed directly to the most efficient exit without undue delay and confusion.
Implementation of **MM T-1**, requiring a Construction Traffic & Access Management Plan with measures for controlling and ensuring continued access to the Zoo and through the interior of the Zoo circulation system, would address impacts from construction of proposed improvements on emergency access and evacuation of the Zoo in response to a wildfire. Impacts associated with increased risk of wildfire during Project construction would be *less than significant with mitigation*.

**Operation**

**Emergency Response and Access**

The Project would not directly impair adopted County or City mapped Disaster Routes along I-5, SR-134 and San Fernando Road, as all development would be contained within the Zoo and bordering areas of Griffith Park. As discussed in Section 3.13, Public Services, the proposed Project would include improvements to existing roadways and circulatory systems both within and surrounding the Zoo that would improve emergency response and access. Improved vehicle entry at the Gottlieb Animal Health and Conservation Center and a new vehicle entrance emergency vehicle access from Zoo Drive would expand and enhance emergency access to the interior of the Zoo and the perimeter fence line. In addition, proposed realignment of Crystal Springs Drive and improvement of the Crystal Springs Drive/Griffith Park Drive intersection would reduce congestion and improve emergency vehicle response to the Zoo (refer also to Section 3.15, Transportation and Circulation). These external circulation improvements would occur in Phase 1 of the Project, which would provide improved access to the Zoo early in Project implementation.

Proposed improvements to internal service roads would occur phase by phase to allow for more efficient and direct emergency response to areas within the Zoo. Installation of a perimeter tram road and improved service roads would provide improved firefighter and vehicle access to high fire hazard areas along the Zoo’s perimeter. Service roads would be closed to visitors, allowing efficient and direct emergency response to areas within the Zoo. Further, proposed improvements to pedestrian paths would also expand site accessibility, given that proposed circulation improvements would be required to meet LAFD and CFC standards. Improvement of existing Zoo perimeter roads and construction of new perimeter roads within the California planning area in Phase 1 would also improve firefighting vehicular access to the Zoo’s WUI and LAFD’s ability to defend the Zoo. As such, the Project would not
3.17 Wildfire

impair emergency response and access, and associated impacts would be *less than significant*.

**Emergency Evacuation and Sheltering in Place**

The Project would substantially increase overall annual visitation and employment at the Zoo and maximum occupancy would increase with expanded visitor-serving uses. Zoo occupancy fluctuates throughout the day, with peak occupancy at a given time estimated between 5,500 and 10,000 under the Project. Increased visitation and capacity at the Zoo would potentially result in greater totals and densities of people within a Very High FHSZ that may evacuate during a Griffith Park wildfire. Increases in after-hours special events during peak wildfire season such as Brews at the Zoo, may pose unique challenges for evacuation due to lower visibility, amplified music, alcohol use, and fewer staff members to assist with implementation of the Zoo’s evacuation plans.

Proposed circulation improvements would enhance emergency evacuation routes by creating direct routes and permitting some degree of widening of internal service roads. Currently pedestrian paths composing the Zoo’s internal circulation systems are fragmented and include many smaller loops, barriers, dead-ends, and are characterized by one-way-in-one-way-out paths, creating confusion and backtracking. Proposed circulation, including a primary path looping around the Zoo’s central exhibits and improved directional signage, would improve easy and direct wayfinding and streamline pedestrian travel in the event of an emergency evacuation. The Zoo’s entrance walkway would also be substantially widened easing evacuation through this potential chokepoint. The Zoo capacity increase projected under the Project would be paired with substantially improved internal circulation and wayfinding to ensure visitors can efficiently exit the Zoo during a wildfire evacuation.

Expanded exhibit space would potentially increase total number of animals housed within the Zoo, as well as placing some animals closer to the WUI in the California and Africa planning areas following implementation of Phases 1, 2, and 3. During emergency conditions when a wildland fire is imminent, it may prove difficult to evacuate panicked individuals on the Zoo site as well as the hundreds of individual animals under Zoo care. For example, in response to the November 9, 2018 wildfire, Zoo staff began evacuation or relocation of some animals, including some small primates and moving birds from the bird show exhibit into an indoor classroom to protect their sensitive lungs from the smoke of the nearby wildfire. Evacuation
of Zoo patrons was not required as the Zoo had not yet opened and did not open as the potential wildfire threat was imminent.

The Zoo maintains and implements the Los Angeles Zoo Procedures Manual, which includes the Fire Preparedness and Response Plan and Zoo Staff and Volunteer Evacuation Plan addressing procedures and protocols for evacuation of Zoo staff, visitors, and animals or the shelter of certain species in place. With implementation of MM WF-2, updates to the Los Angeles Zoo Procedures Manual and the City Emergency Operations Plan would reflect changes made to the internal circulation system with each phase of Project implementation and integrate requirements for wayfinding and evacuation assistance for visitors, as well as refreshed requirements for Zoo animal protection and evacuation, during a wildfire in Griffith Park. Operational impacts on emergency evacuation and shelter of select species in place would be less than significant with mitigation.

| WF-2: | Would the project exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire due to slope, prevailing winds, and other factors? |

The Project site is located within a Very High FHSZ at the base of steep vegetated slopes within Griffith Park, with onsite and adjacent fire-prone vegetation, steep slopes, limited perimeter access, and annual Santa Ana Winds. Wildfire ignition sources are predominantly human-caused, including power utilities or equipment sparking (12 percent) vehicle and equipment operation (19 percent), and campfires and smoking (4 percent) (CAL FIRE, 2019). Construction and operation of the Zoo would potentially entail several of these activities that are among the leading known causes of wildfire in California. Implementation of the Project would also involve a phased construction period, construction of facilities along the Zoo’s WUI, and increased visitation. When combined, these conditions could exacerbate wildfire risks, expose visitors, employees, and Zoo animals to wildfire hazards, and potentially contribute to the uncontrolled spread of wildfire.

**Construction**

Project construction would introduce new potential ignition sources in a Very High FHSZ such as the use of heavy machinery and fuels, which create the potential for sparking. Sparking within a heavily-vegetated Very High FHSZ would exacerbate wildfire risk. Proposed construction would extend over up to 20 years, potentially extending through drought periods where wildfire risk may be greater. Major construction of the new California and Africa planning areas in Phases 1 and 3 would occur within areas that currently support flammable native and non-native vegetation, and are located on steep slopes adjacent to wildlands in Griffith Park. Vegetation clearing, grubbing, grading, and facility construction, for the planned tram road, service facilities, and the California and Africa exhibits along Zoo’s perimeter would similarly occur within and adjacent to areas that support flammable vegetation. Major excavation, including potential blasting, for Condor Canyon in the California planning area, could also add to construction-related fire ignition risks. Although
all construction would be performed in a fire-safe manner consistent with existing regulations, potential for accidental ignition of onsite or adjacent wildland vegetation would remain.

Each Project phase would involve tree and vegetation removal, including hundreds of highly-flammable eucalyptus trees over the 20 year construction period, as well as over 13 acres of flammable native chaparral and up to 7 acres of oak woodland. Construction in these areas would remove unmaintained flammable native and nonnative vegetation and replace it with irrigated native and ornamental vegetation, potentially reducing the extent of onsite flammable vegetation. This is especially significant in the Africa and California planning areas located on undeveloped hillsides of the Zoo bordering wildlands to the southwest and east of the Project site, respectively. However, construction activities proximate to chaparral and other fire-prone plant communities within Griffith Park would continue to present risk associated with spread of wildfire.

Chapter 33 of the City’s Fire Code outlines the requirements and measures to be implemented during construction, alteration, or demolition of any structures to reduce risk of fire ignition. These measures include, but are not limited to, prohibition of smoking except in areas approved by the LAFD, refueling of equipment within appropriate locations, preparation of a fire prevention program, and designation of fire watch personnel during occurrence of hazardous construction activities. In addition, all construction would be required to comply with NFPA 241 Standards for Safeguarding Construction, Alternation, and Demolition Operations. With implementation of existing regulations, risks association with construction of the Project over the Vision Plan implementation period would be reduced such that associated wildfire risk would be nominal. Impacts associated with increased risk of wildfire during Project construction would be less than significant.

**Operation**

While changes in the interior of the Zoo may reduce risk of onsite vegetation ignition, increased visitation and new exhibits may provide new ignition sources which could also incrementally increase the risk of wildfire impacting Griffith Park. As discussed, the proposed Project would increase annual Zoo visitation increasing the total and density of people in a designated Very High FHSZ. The Zoo’s WUI of almost 1.5 miles in length with the flammable wildlands of Griffith Park would continue to expose the Zoo to wildfire threats, which may
increase with the increase in visitation. For instance, the Project would expand night time activities, including campouts in the Africa and California planning areas, and additional special events throughout the year. These new activities may involve potential ignition sources ranging from regulated campfires, cooking/BBQ, electric wiring, and unpermitted smoking.

The construction of new exhibits along the Zoo’s perimeter and substantial increases in visitation may incrementally exacerbate wildfire risks, and expose visitors to increased risk of wildfires or fire-created pollutant emissions. A large wildland fire, particularly during periods of high winds, could advance into the Zoo or send ember showers to ignite flammable vegetation within the Zoo. This threat would be exacerbated in the event a wildfire incident were to occur during operation of the Zoo on a peak attendance day or during special events, when several thousand Zoo visitors, staff, and animals would be forced to evacuate. In the event of wildfire when the Zoo is open, visitors would be exposed to increased concentrations of pollutants (smoke) during a wildfire for short durations; Zoo animals that are not evacuated would be subject to smoke pollution through the duration of the wildfire.

To manage and reduce wildfire risks, the Zoo would continue to implement several procedures for managing fuels, ensuring adequate evacuation of the Zoo, and providing appropriate forms of access to the Zoo and surrounding WUI. These measures include the management of vegetation on an annual basis, as required in the City’s Fire Code and by LAFD, and preparation and application of emergency management and evacuation plans per both City and AZA regulations. In addition, all development proposed under the Vision Plan would undergo plan review by the LAFD to ensure appropriate designs for access and fire flow as required under Chapter 5 of the City Fire Code. Per MM WF-2, the Zoo would be required to update these plans as appropriate based on proposed improvements and changes in site access and circulation through Project implementation. Therefore, with the application of existing regulations and requirements to update wildfire management and evacuation plans, the Project would not significantly exacerbate wildfire risks resulting in the exposure of Zoo staff and visitors to wildfire hazards, and impacts would be less than significant with mitigation.

WF-3: Would the project require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?

The proposed Vision Plan would include the installation and maintenance of new or improved/realigned roads, emergency water sources, power lines or other utilities throughout the Zoo within existing developed/disturbed areas. The risks associated with installation, operation, and maintenance of these facilities is discussed in detail under Impact WF-2 above. However, as also discussed in Section 3.3, Biological Resources, Project implementation would develop hillside areas within the Zoo that currently acts as fuel breaks.
between the Zoo and wildland areas. Expansion or reestablishment of these fuel breaks elsewhere around these proposed areas of development would potentially result in loss of sensitive natural communities, species, and protected trees. Undeveloped hillsides in the California and Africa planning areas are proposed for substantial new development in Phases 1 and 3, including construction of visitor and special-event centers, various animal exhibits, pedestrian pathways, and service roads. Vegetation within portions of these undeveloped hillsides are currently managed through clearing, mowing, or trimming by the Zoo and LAFD as a fuel breaks between the Zoo and surrounding Griffith Park and WUI. It is likely new fuel breaks would be located along the perimeter of the California and Africa planning areas in compliance with existing City Fire Code and LAFD regulations.

In the Project vicinity in Griffith Park, vegetation is dominated by native chaparral and oak woodland habitats, as well as nonnative grasses and scattered invasive species (e.g., eucalyptus). The installation and maintenance of new or expanded fire buffer and fuel breaks would require mowing, substantial trimming, or complete removal of almost all vegetation within up to a 100-foot buffer area around the Zoo perimeter. Precise measurements of habitat loss are difficult to calculate due to the conceptual nature of Project plans and are also contingent upon LAFD direction, which is provided annually based on site inspections. However, in total, installation and maintenance of this fuel buffer could result in up to 6 acres of disturbance or loss of native chaparral and oak woodland habitat within Griffith Park. With implementation of MM BIO-2 and MM WF-1, adverse impacts to biological resources as a result of installation and maintenance of these fuel breaks would be reduced through maximum avoidance of native vegetation and appropriate restoration offsite. Therefore, impacts would be less than significant with mitigation.

WF-4: Would the project expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?

Development of the Project would occur downslope or downstream of steep hillsides and three small drainages within Griffith Park. There are no creeks or rivers mapped within the Project site, but stormwater flows from the hillsides into the Zoo’s stormwater management system, where stormwater is treated before it flows to the Los Angeles River. If a wildfire burned large areas within Griffith Park adjacent to the Zoo, post-fire runoff from a major storm event, slope instability, mudflows, landslides, drainage changes, and limited flooding or sedimentation could occur within the Zoo. The relatively small size of the watershed draining into the Zoo (~80-acres) would potentially limit problems. However, the sandy erosion-prone soils of these hillsides, areas of very steep slopes and very steep cuts, and embankments show signs of slumping and collapse (refer also to Section 3.7, Geology and Soils). High intensity heat from wildfires can make soils hydrophobic (i.e., repel or fail to mix with water), reducing infiltration and increasing runoff potential. If wildfire-denuded surrounding hillsides were subjected to a high intensity rain event, new development within
the Zoo has limited potential to face damage from flooding and sedimentation. Sediment and debris could plug existing and planned drainage improvements, including the proposed cistern system (refer to Section 3.10, Hydrology and Water Quality). Post-fire conditions on hillsides and slopes within the Zoo could cause similar effects to lower-lying facilities.

Two of the proposed subsurface cisterns serving the Condor Canyon, Bird Show and Animal Programs amphitheater, and the Nature Play Park planning area, are located on high elevation sites relative to the flat interior or the Zoo. These new cisterns would capture all runoff, debris, and sediments conveyed through the watershed, resulting in the potential accumulation of sediment or debris within the system. This would be exacerbated in the event of high rainfall closely following burn of the watershed. However, the small size of the existing watersheds would not create significant runoff, debris flow, or landslides caused by post-fire slope instability that place Project occupants or structures at substantial risk. Therefore, impacts would be less than significant.

3.17.4 Mitigation Measures

The following measures are identified to address wildfire hazards and response, as well as biological impacts associated with creation of new fuel breaks around the Zoo’s perimeter in Griffith Park.

**MM BIO-2** shall apply.

**MM T-1** shall apply.

**MM WF-1 Wildfire Fuel Management Plan**

The Zoo shall retain a City-qualified specialists (i.e., fire management professionals) and City-approved biologist to prepare a Wildfire Fuel Management Plan (WFMP) to design the creation and maintenance of required fire buffers and fuel management zones around the Project site while preserving the integrity of existing native oak woodland, chaparral and coastal sage scrub habitats to the maximum extent feasible. To the maximum extent feasible, native trees and shrubs, such as coast live oak, coastal scrub, and grassland shall be thinned and limbed up but left in place. The WFMP shall be prepared consistent with the requirements of PRC Section 4291 and also detail methods for achieving fire safety around new and existing structures. The WFMP shall incorporate management strategies in coordination with RAP and LAFD to address any needed future management actions in Griffith Park buffering the Project site. Vegetation and other fuels with the management zone(s) shall be maintained by the Zoo in a manner consistent with existing CFC and LAFD regulations to reduce fuel loading in vulnerable areas and to avoid the buildup of deadwood and leaf litter and/or inappropriate storage of flammable materials. Specifically, the WFMP shall describe at least the following elements:

- Vegetation coverage and type within and adjacent to the vegetation management zone(s);
• Sensitive species identification, mapping, and avoidance;
• Setbacks between structures, Project site boundaries, and access routes;
• Location and management procedure for flammable materials use and storage; and
• Development plan landscaping and planting standards within the setback areas.

The Zoo shall submit the WFMP to the City Bureau of Engineering, Emergency Management Department, RAP, LAFD, and California Department of Fish and Wildlife (CDFW) for review and approval prior to issuance of any grading and development plans for improvements under the Project.

**MM WF-2 Zoo Evacuation and Fire Response Access Plan**

Prior to initiation of each phase of Project implementation, the Zoo shall prepare and implement an Evacuation and Fire Response Access Plan (EFRAP), which shall address conditions and requirements for both construction and operation of the Zoo area affected by the Project. The EFRAP shall be prepared in coordination with the LAFD and RAP. The Zoo Department shall oversee implementation of the EFRAP, including updates of the Los Angeles Zoo Procedures Manual and coordination with the City Emergency Management Department – Planning Division for updates of the City Emergency Operations Plan. The EFRAP shall include, but not be limited to:

- Evacuation of Visitors and Employees
  - Designated evacuation routes and exits within the Zoo for Zoo visitors and employees;
  - Wayfinding and signage to assist with route, exits, and meeting area identification during evacuation;
  - Special considerations and requirements for nighttime evacuations;
  - Accommodations for special care or disabled guests or employees;
  - Specified egress points for transportation vehicles and traffic controls to help efficiently evacuate the Zoo’s parking lot;
  - Contingency plans for changes to the construction schedule or phasing plan that would affect the primary evacuation plan and routes; and
  - Regular practice drills (e.g., one per year) for implementation of the EFRAP.

- Fire Response Access within the Zoo
  - Specified at least two dedicated ingress points for emergency responders;
  - Specified firefighter staging or command locations within the Zoo (e.g., northern parking lot or Gottlieb Animal Health Center); and
  - Traffic controls at gates and intersections to balance ingress/egress needs during evacuation.

- **Zoo Animal Shelter in Place and Evacuation**
• Shelter-in-place accommodations; and
• A relocation plan from the Project site to a secondary location or facility, with associated transportation.

### 3.17.5 Impacts Summary

With implementation of mitigation measures **MM BIO-2, MM T-1, MM WF-1** and **MM WF-2**, impacts associated with conflict with adopted emergency management or evacuation plans and loss of native habitat as a result of installation and maintenance of require fuel breaks would be less than significant. Significant unavoidable adverse impacts to wildfire risks would not occur.