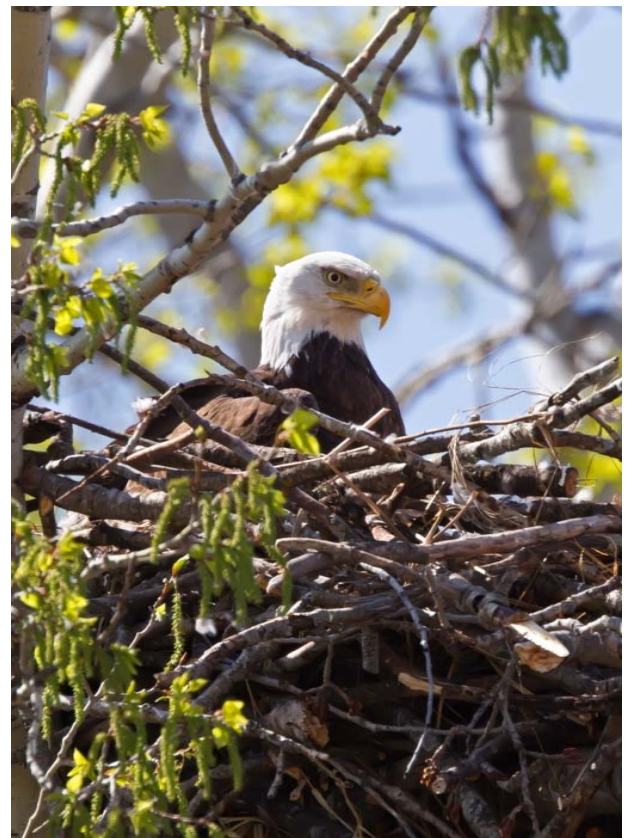


Protected Species Management Plan: Bald Eagle

Ross Drive & Birney Ave,
Vancouver BC

UBC Properties Trust
Suite 200 – 3313 Shrum Lane
Vancouver, BC, V6S 0C8

Date: March 23, 2017



Submitted by:

Diamond Head Consulting Ltd.
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WCB: # 657906 AQ (003)

General Liability: Northbridge General Insurance Corporation - Policy #CBC1935506, \$5,000,000
Errors & Omissions: Lloyds Underwriters – Policy #1010615D, \$1,000,000



Introduction

This Protected Species Management Plan is intended to inform proposed construction of a multi-unit residential development on Ross Drive at Birney Ave on the University of British Columbia South Campus. A bald eagle nest is located immediately adjacent the proposed development lot, and could be impacted by development activities. This nest is legally protected under the British Columbia **Wildlife Act, 1996**. Under this Act:

It is an offence to possess, take, injure, molest or destroy a bird or its eggs, or the nests of birds when occupied by a bird or egg. In addition, **the nests of all species of eagles** and herons, as well as ospreys, peregrine falcons, gyrfalcons, and burrowing owls are protected year-round, whether or not the nest is in use.

Current best practices are referenced to guide proposed development in the vicinity of the nest site. These best practices include *Develop with Care 2014: Environmental Guidelines for Urban and Rural Land Development in British Columbia* and *Guidelines for Raptor Conservation during Urban and Rural Land Development in British Columbia* (2013), which are published by the BC Ministry of Environment (MoE). This management plan is based on these current best practices, as well as the specific conditions observed at the site by Diamond Head biologists on March 8, 2017.

Nest Description

The eagle nest of interest is located close to the top of a large Douglas-fir (*Pseudotsuga menziesii*) tree, approximately 125cm in diameter and 41m in height, located on Ross Drive between Birney Avenue and the UBC Farm access road. The tree is 9m from the sidewalk and appears healthy with no signs of structural instability. The nest is approximately 120cm across and 50cm deep. It was constructed close to the main stem at a natural crotch of large branches about 8m down from the top of the tree.

A site visit was conducted on March 8, 2017 to inform this management plan. Two adult bald eagles were observed perching close to the nest, suggesting that it is active. Bald eagles in the Lower Mainland typically begin nesting in January, laying eggs as early as February. Young may be present in the nest until late August¹.

¹ BC Ministry of Environment. 2013. Guidelines for Raptor Conservation during Urban and Rural Land Development in British Columbia.



Photo 1. Two adult eagles perched near the nest



Photo 2. The eagle nest

Site Description

The nesting tree is located within a linear band of forest that is between Ross Drive and the UBC Farm. The surrounding area to the north and east is largely developed with high density commercial and residential buildings, playing fields and historically cleared lands. At the time of the assessment there was active construction ongoing within this area. The UBC Farm, which includes various fields with scattered small shrub and treed areas, is located just south of the tree. Fragmented tree stands remain in this area, with a larger forest patch (approximately 100ha) located 200m to the northwest.

The patch of forest that contains the nest is ~1800m² and comprises six large Douglas-fir (*Pseudotsuga menziesii*) that are 40-42m tall and 60-140 cm in diameter. There is a suppressed layer of 10-15m tall western redcedar (*Thuja plicata*), Douglas-fir, bigleaf maple (*Acer macrophyllum*), red alder (*Alnus rubra*) and cherry (*Prunus sp.*). The understory includes fragmented patches of salal (*Gaultheria shallon*), red huckleberry (*Vaccinium parvifolium*) and



braken fern (*Pteridium aquilinum*). Invasive English holly (*Ilex aquifolium*) and Scotch broom (*Cytisus scoparius*) were also noted.

The surrounding mature tree stands are similar in species composition and structure. There is a 1500m² stand located about 20m to the south by an inactive road and temporary power station. To the east, the closest forest patch is 55m away. These stands support a moderate density of mature Douglas-fir, with a codominant layer of mostly 15-30m tall western redcedar, Douglas-fir, and bigleaf maple.

There is an area that was historically clear of vegetation to the northwest of this stand of trees. This area has been cleared since the 1980's. There is a smaller area to the southeast adjacent to the UBC Farm Access road, about 30m south of the nest, that was cleared for the installation of a temporary power station.



Figure 1. Eagle's nest location and surrounding areas



Photo 3. Area with no vegetation northwest of nest tree. This area was cleared in the 1980s.



Photo 4. View of nest tree



Photo 5. View southwest toward nest tree



Photo 6. View northwest toward nest tree



Recommendations

The following best management practices (BMPs) apply to eagle nests in urban environments of British Columbia:

1. Retain existing habitats and features; minimize loss of natural vegetation.

The minimum recommended buffer of undisturbed natural vegetation for urban raptor nests is 1.5 tree lengths, which is equivalent to about 60m for this tree. Much of the area that is within this 60m radius has been historically cleared of vegetation (Figure 2) and the property line for the proposed development site extends to within 5m of the nest tree. **All remaining trees and vegetation within this buffer zone are recommended be retained and protected during construction (Figure 3).** Tree protection measures, including adequate Root Protection Zones (RPZ), should be established and enforced to ensure trees and their roots are not damaged during construction.

Tree #2599, a 110cm Douglas-fir at the western extent of the protected vegetation zone (Figure 3), is a high quality habitat tree which should be retained. The recommended RPZ for this tree is 10m. However, as this RPZ overlaps significantly with the proposed development area, special measures could be implemented to increase development flexibility without compromising the structural integrity of the tree. This would involve allowing construction to within 7m of the tree, and additional cantilevered structures built over the root zone up to 1m into the RPZ. Alternatively, construction could occur to within 8m of the tree with an additional 2m of cantilevered structures. The design must include profiles indicating the shoring and cantilever construction methods with potential impacts and limits, and must be reviewed and approved by Diamond Head Consulting. Additionally, all construction work within the 10m RPZ must be supervised by a certified arborist, and mulch must be applied to the rooting zone to accommodate for tree root loss.

It should be noted that the tree immediately adjacent the nesting tree on Ross Drive (tree #11099) has had its roots cut 2m from the sidewalk and has a thinning crown. This tree should be monitored for health and signs of instability on an ongoing basis.

2. Protect raptor nest sites.

Bald eagles are considered tolerant of human activity with a moderate to high ability to co-exist. Provincial BMPs recommend a no disturbance buffer be established during the active nest season. This includes the 60m vegetated buffer, as well as an additional noise buffer of 100m which is in effect before and during the breeding season. Most of the proposed development site is within this noise buffer.

Noise levels from construction activities vary depending on the type of work and the equipment used. The characteristic of the noise and its duration also affect how it will impact wildlife. This site currently experiences moderate to high noise disturbance from ongoing construction and traffic. Typical noise levels for construction equipment are between 75 and 90 dBA². Examples of high decibel construction activities include: Pile drivers, jack hammer, rock drills and blasting.

² Hanson, CE; Towers, DA; Meister, LD. 2006. Transit Noise and Vibration Impact Assessment. US Department of Transportation Federal Transit Administration: FTA-VA-90-1003-06



Nesting Eagles have been shown to be resistant to noise disturbances as loud as 94 dBA; however, all individual birds have unique tolerance levels, and the long-term impacts of noise disruption on eagle health and productivity are largely unknown³. The types of construction activity that cause loud (>90dBA) and sudden noises should be avoided within the 160m noise buffer during the breeding and nesting season (January 1 to August 31). If construction activities associated with loud noises occur during a breeding and nesting season, a Qualified Environmental Professional (QEP) must be retained to develop a mitigation work plan and to monitor the effects on nesting activity.

It is recommended that a noise monitoring program be considered this year to determine the noise levels that the nest site is currently experiencing. Assuming the nest is successful this year, these noise levels will provide some guidance as to the tolerance levels of the nesting eagles.

Specific requirements include:

- After January 1, a QEP will be required to assess the nest and determine whether nesting activity has begun. If nesting activity has not been initiated, subsequent bi-weekly assessments must continue until identified construction activities/disturbances have ceased or active nesting has commenced.
- If active nesting commences while construction is active, the QEP must draw up a modified workplan and include recommendations following provincial or other Best Management Practices to minimize potential impacts to bald eagles and nesting behaviour. The workplan must address the type, duration, and intensity of work permitted within specified timelines. Expected loud noises must be identified and strategies implemented to mitigate them.
- The QEP must be on site during loud noise construction activities to determine if there are any impacts to bald eagles or eagle nesting behaviour. Time on site will be governed by the type and duration of identified construction activity. During this period, a weekly monitoring report must be produced by the QEP. Camera monitoring is preferred for ongoing data.
- The QEP will have authority to require the contractor to stop work if construction activity is deemed to be disturbing the nesting activity of the bald eagles.
- Recommendations in this report follow Provincial Best Management Practices. If during future monitoring associated with this development, any subsequent recommendations from a QEP depart from those of the Provincial BMPs, the report must indicate how and why the QEP recommendations depart from the BMPs and, that in their opinion, the Wildlife Act will not be contravened through the implementation of those recommendations.

³ Johnson, NP. 1990. Nesting bald eagles (*Haliaeetus leucocephalus*) in urban areas of southeast Alaska: assessing highway construction and disturbance impacts. *Transportation Research Record* 1279

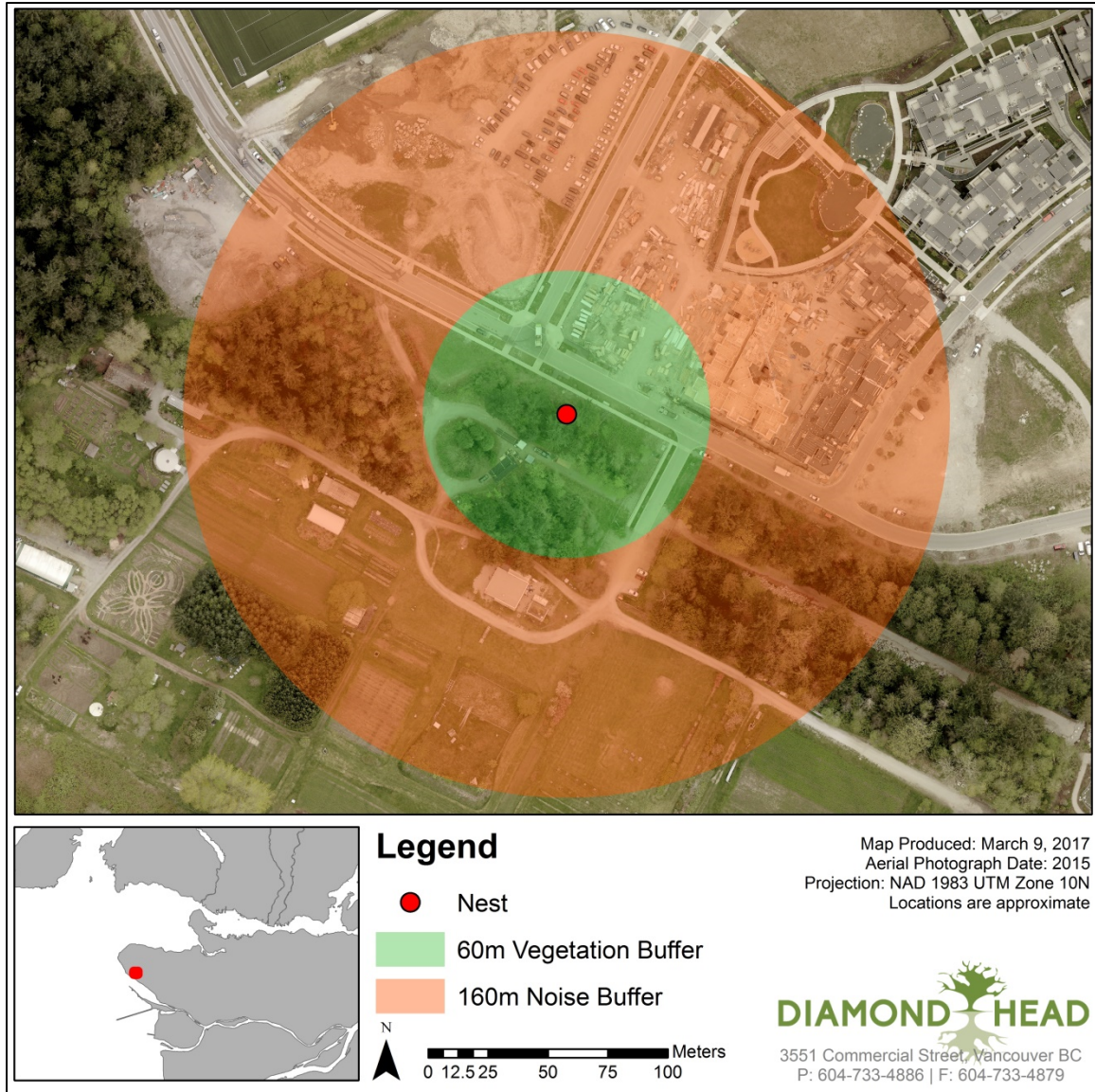


Figure 2. The 60m vegetation buffer and 160m noise buffer for the eagle nest

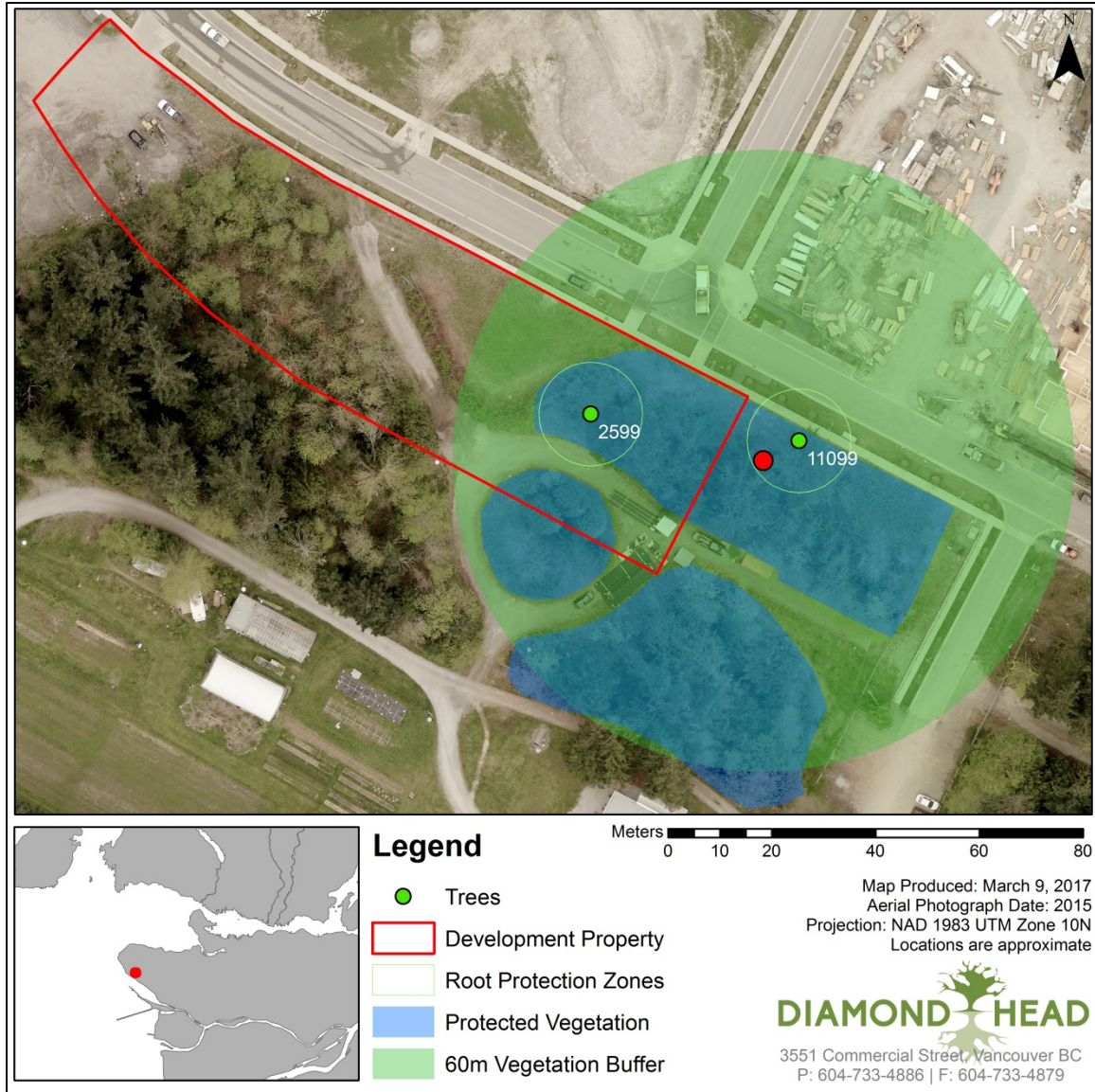


Figure 3. Proposed development property boundaries and vegetation to be protected

3. Protect raptor roosting/perching sites and foraging areas.

Nesting Eagles tend to roost in close proximity to their nest site. Existing trees within the vegetation buffer should be protected. Tree protection measures (including an adequate root protection zone) should be in place to ensure trees and their roots are not damaged during demolition and construction. There are high value forage areas at UBC Farm and the coastline to the south and east of the nest. These areas are not planned to be impacted by development.

4. Avoid disturbance of sensitive habitats during and after development.

New trails, buildings and roads should be located as far as possible from the nest site, as well as any roosting or foraging areas. Machinery, people and pets should be similarly kept away from nesting, brooding and rearing areas. As this nest site has already experienced significant encroachment of human activities and human development, care should be taken to avoid any further disturbance beyond the proposed development.



5. Manage, restore or enhance raptor habitat and features.

There are areas within the vegetation management zone that are clear of vegetation. The areas that are not being developed, including areas adjacent to roads, should be restored back to native plant communities. Planned pathways should be minimized through this area. Once the temporary power station is removed, this area should also be restored.

6. Minimize the risk of accidental mortality.

Efforts should be made to reduce the probability of electrocution from power lines and collisions with wires, windows and sundeck enclosures. Transmission lines should be located underground where possible; large floats and other markers should be used to make any exposed lines more visible. Use non-transparent materials for sundecks and tinted films or screens on windows and clear panels.

7. Avoid the use of pesticides and herbicides.

Use integrated pest management strategies and avoid the use of chemical pesticides. Use traps instead of poisons to control rodents.

8. Educate the public about the importance of maintaining raptors in urban and rural environments.

Use interpretive materials to make the public aware of the need to protect raptor habitats and to prevent disturbance to the nest site. Local residents and landowners should be informed about the eagles near their property and encouraged to observe and record their activities.

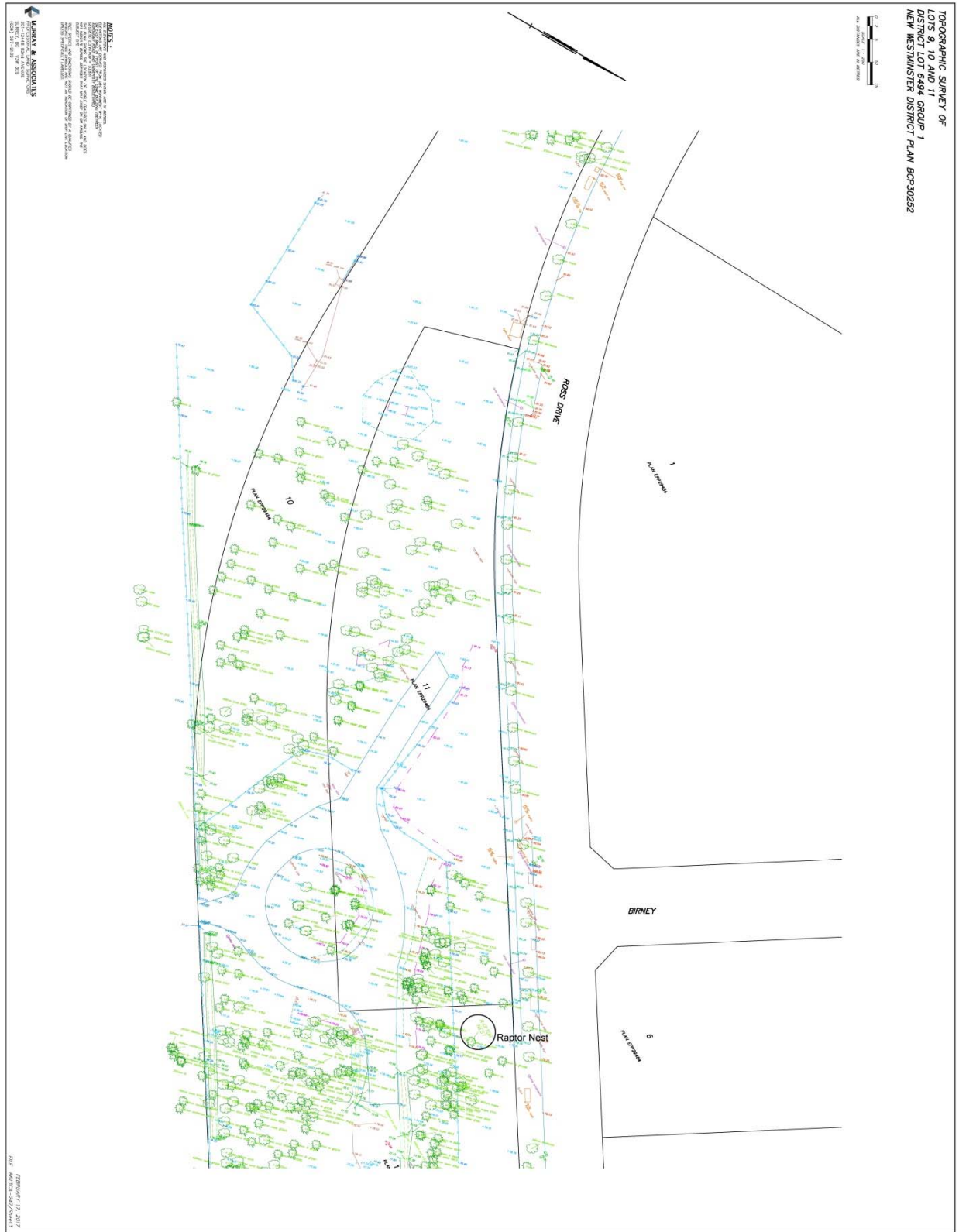
Final Remarks:

The eagle nest is currently active and has been exposed to substantial site disturbance and noise associated with the ongoing construction in the area. This is an indication that the pair of eagles is relatively tolerant to urban influences. However, it is difficult to predict behavior responses and determine how tolerant they will be to the planned development activities; efforts should be made to prevent future nest abandonment and death of offspring. The recommendations made within this report are intended to prevent any further disruption to the nesting site and mitigate the impacts of nearby development activities.

We recommend that a monitoring program be established this year to evaluate and report on the success of the nest site. Monitoring should begin as soon as possible. **If construction activity is deemed to be disturbing nesting activity, the contractor may be required to stop work or enact additional mitigation measures.** Potential options for monitoring include repeat visits by a QEP, partnership with local stewardship organizations and/or wildlife video/photo nest monitoring.



Appendix A – Site Plan





Appendix B - Statement of Limitations

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