Seattle Children's Hospital

Proposed Relocation of Existing Helistop

Addendum to the Final EIS for the Seattle Children's Hospital Major Institution Master Plan

Master Use Permit No. 3011707

Date of Issue: January 6, 2011

City of Seattle
Department of Planning and Development

Proposed Relocation of Existing Helistop

Addendum to the Final EIS for the Seattle Children's Hospital Major Institution Master Plan

City of Seattle
Department of Planning and Development

This EIS Addendum has been prepared in compliance with the State Environmental Policy Act of 1971 (Chapter 43.21C, Revised Code of Washington); the SEPA Rules, effective April 4, 1984, as amended (Chapter 197-11, Washington Administrative Code); and Seattle's Environmental Policies and Procedures Code (Chapter 25.05, City of Seattle Municipal Code), which implement SEPA. Preparation of this EIS Addendum is the responsibility of the Seattle's Department of Planning and Development (DPD). In managing preparation of this EIS Addendum, DPD has determined that this document has been prepared in a responsible manner using appropriate methodology and DPD has directed the areas of research and analysis that were undertaken in preparation of this document.

Date of Issuance of this EIS Addendum…… January 6, 2011

Preface

The purpose of this EIS Addendum is to provide site-specific information for Seattle Children's Hospital proposed Relocation of Existing Helistop.

This EIS Addendum adds information to the Draft, Final, and Revised Final EISs that were prepared for Seattle Children's Hospital *Major Institution Master Plan.*[1] This EIS Addendum is not an authorization for an action, nor does it constitute a decision or a recommendation for action. This EIS Addendum will accompany the helistop relocation proposal through the City's review processes and be considered by City officials in making the necessary permitting or approval decisions regarding this proposed development, as noted on page i of the *Fact Sheet* to this EIS Addendum.

Elements of the environment that were analyzed in the Draft and Final EISs for Seattle Children's *Major Institution Master Plan* included the following:

- Geology
- Air
- Water
- Energy and Natural Resources
- Noise
- Hazardous Materials
- Land Use
- Housing
- Aesthetics/Light, Glare and Shadows
- Transportation and Parking
- Public Services and Utilities
- Plants (included in Aesthetics)

The Draft EIS for the *Major Institution Master Plan* was issued in June 2008. On November 10, 2008, DPD issued a Final Environmental Impact Statement (FEIS). It fully incorporated the information contained in the DEIS, comments received on the DEIS during the public review period, responses to those comments, and additional information developed in response to comments.

On December 11, 2008, DPD issued an errata to the FEIS containing an additional comment letter, and locations in the November 10, 2008 FEIS where the same or similar comments were made and a response provided. In May 2009, DPD issued a Revised Final EIS limited to only new information provided on land use (Section 3.7) and housing (Section 3.8) developed in response to the Hearing Examiner's finding of inadequacy on those two issues only. The Hearing Examiner subsequently found the EIS to be adequate.

On August 12, 2010, DPD issued an Addendum to the EIS for the Phase 1 Development Project, the construction of a 7-story structure (above-grade) with one partial below-grade floor and one below-grade floor. The entire building would contain approximately 320,028 square feet of floor area. New surface parking lots containing approximately 201 parking spaces were proposed to be constructed north and south of the new building. DPD issued a decision approving the MUP for the Phase 1 Development Project on October 28, 2010 (Permit 3011377). The relocation of the helistop from its existing location north of the Emergency Department was not included as part of the Phase 1 Development Project.

Children's is now proposing to relocate the helistop to a ground location north of the Phase 1 Development Project in an area that was to contain 11 surface parking spaces. As described by Children's, the ground location is a temporary location, lasting until they proceed with the next

[1] Seattle, DPD, 2008 and 2009 (refer to the *References* section of this EIS Addendum for the complete citation).

phase of development for the Diagnostics and Therapeutic (D&T) Building. No date has been established as to when that development may occur, but it is anticipated to be at least seven years if not longer into the future. At that time, Children's has stated that they will include in their application for the D&T Building, a request for City approval to move the helistop from the proposed ground location to a temporary location on top of the Phase 1 Development building, and then to a permanent location on top of the D&T building.

The Draft, Final and Revised Final EIS, and the August 12, 2010 Addendum for Seattle Children's Hospital *Major Institution Master Plan* are adopted for purposes of this environmental review.

This EIS Addendum provides additional site-specific information concerning the proposed Relocation of Existing Helistop. The EIS Addendum is organized into three major sections. The *Fact Sheet* (starting on page i) provides an overview of the proposed project and location, permits required, and points of contact. *Section 1* provides a summary of the proposed action and a comparison of the development proposed as part of the approved *Major Institution Master Plan*. *Section 2* describes the Proposed Action. *Section 3* provides additional information relative to the environmental impacts associated with the Proposed Action.

Fact Sheet

Name of Proposal Seattle Children's Hospital – *Relocation of Existing Helistop*

Proponent SEATTLE CHILDREN'S HOSPITAL

Location The Proposed Action is located in northeast Seattle on the 28.84-acre campus of Seattle Children's Hospital. Specifically, the site of the proposed helistop relocation is within the expanded campus area to the west of the existing development, and located on the ground north of the Phase 1 Development Project.

Proposed Action The *Proposed Action* is the relocation of the existing helistop at Seattle Children's Hospital from the existing ground location north of the Emergency Department to a new ground location north of the Phase 1 Development Project. The Proposed Action also represents a change from the helistop relocation approved in April 2010 as part of Alternative 7R in the adopted MIMP.

The helistop will consist of an approximately 36-foot diameter paved circle marked with an "H". The landing will be at elevation 71.5, approximately 15 feet above the level of the surrounding parking lot. A landscaped berm of an approximately 1:3 slope will separate the helistop from the parking lot. The helistop would be lit by low wattage downlights that would be turned on when the hospital is notified of a pending transfer. The lights would remain on until the helicopter has departed.

The helistop will be connected to the new Emergency Department via a 10-foot wide paved pathway that will transition to a pedestrian bridge to connect directly to Level A of the building.

Children's is proposing that the relocated helistop remain at the ground location north of the Phase 1 Development Project until plans are developed for the Diagnostic and Therapeutic (D&T) Building. This building is anticipated to be located north of the Phase 1 Development Project and would likely be constructed in seven to ten years. As part of the analysis and separate MUP application prepared for the future D&T building, Children's will propose a permanent location for the helistop. Children's has stated that they will include in their D&T Building MUP application, a request for City approval to move the helistop from the ground location to a temporary location on top of the Phase 1 Development Project, and then to a permanent location on top of the D&T building.

Lead Agency City of Seattle, Department of Planning and Development

Responsible Official	Diane Sugimura, Director City of Seattle, Department of Planning and Development Key Tower, 700 Fifth Avenue, Suite 2000 PO Box 34019 Seattle, WA 98124-4019
Contact Person	Colin Vasquez, Land Use Planner City of Seattle, Department of Planning and Development Key Tower, 700 Fifth Avenue, Suite 2000 PO Box 34019 Seattle, WA 98124-4019 Telephone: (206) 684-5639 Fax: (206) 233-7902
Addendum; SEPA Documents Adopted	This EIS Addendum adds information to the Draft, Final and Revised Final EISs for the Seattle Children's Hospital *Major Institution Master Plan*[2] (MIMP) and to the information contained in the August 12, 2010 Addendum prepared for the Phase 1 Development Project.
Master Use Permit	Project No. 3011707
Required Approvals	Preliminary investigation indicates that the following permits and/ or approvals could be required for the *Proposed Action*. Additional permits/approvals may be identified during the review process. ***City of Seattle*** *Department of Planning and Development* Permits/approvals associated with the proposed project: - Master Use Permit - Excavation, Grading and Structural Permit - Foundations, Below & Above Grade Structure - Electrical Permits ***Federal Aviation Administration*** - FAA Review/Notice of Landing Area Proposal
Authors and Principal Contributors to this EIS Addendum	The Relocation of Existing Helistop EIS Addendum has been prepared under the direction of the Department of Planning and Development. Research and analysis was provided by the following consulting firms: URS Corporation Wyle Labs (Helicopter Noise)

[2] Op cit

Location of Background Data	City of Seattle Department of Planning and Development Key Tower, 700 Fifth Avenue, Suite 2000 PO Box 34019 Seattle, WA 98124-4019
Date of Issuance of this EIS Addendum	January 6, 2011
Date of Issuance of Previous EIS Addendum	August 12, 2010
Date of Issuance of the Revised Final EIS	May 28, 2009
Date of Issuance of the Final EIS	November 10, 2008
Date of Issuance of the Draft EIS	June 8, 2008
Availability/Cost of the EIS Addendum	Notices of Availability of this EIS Addendum have been distributed to agencies, organizations and individuals noted on the Distribution List (Section 6 of this Addendum). Copies of this document are available for review at the Seattle Department of Planning and Development Public Resource Center, which is located in Suite 2000 of Key Tower in Downtown Seattle (700 Fifth Avenue) and at the following branches of the Seattle Public Library • Central Library (1000 – 4th Avenue) and • North East Branch (6801 – 35th Avenue NE). A limited number of complementary copies of this EIS Addendum may be obtained from the Department of Planning and Development Public Resource Center while the supply lasts. Additional copies may be purchased for the cost of reproduction.

Table of Contents

Page

PREFACE ..... **I**
FACT SHEET ..... **III**
SECTION 1 – PROJECT SUMMARY **1**
1.1 PROPONENT AND PROJECT LOCATION 1
1.2 RELATIONSHIP OF PROPOSED PROJECT TO APPROVED MAJOR INSTITUTION MASTER PLAN 1
1.3 SUMMARY OF SITE-SPECIFIC ENVIRONMENTAL INFORMATION 5
SECTION 2 – PROJECT DESCRIPTION **13**
2.1 PROJECT PROPONENT 13
2.2 PROJECT LOCATION AND PARKING 13
2.3 BACKGROUND INFORMATION 15
2.4 DESCRIPTION OF THE PROPOSED ACTION 20
2.5 FUTURE RELOCATION OF HELISTOP 23
SECTION 3 - ADDITIONAL INFORMATION ABOUT ENVIRONMENTAL IMPACTS & MITIGATION MEASURES **24**
3.1 NOISE 25
3.2 LIGHT AND GLARE 44
3.3 TRANSPORTATION/PARKING 48
3.4 PLANTS 55
SECTION 4 - REFERENCES **59**
SECTION 5 - GLOSSARY **60**
SECTION 6 - DISTRIBUTION LIST **62**

APPENDICES

Appendix A - Noise

List of Tables

Table 1-1 Comparison of Helistop Locations 4
Table 1-2 MIMP Development to Date 5
Table 1-3 Summary Comparison of Impacts Disclosed in EIS for the Operation of the Helistop with Site-Specific Information 6
Table 1-4 Summary of Mitigation Measures 11
Table 3.1-1 Existing Emergency Flight Operations 27
Table 3.1-2 Existing Modeled Noise Levels 28
Table 3.1-3 Noise Exposure from Emergency Operations at Alternative 7RA Helistop Location 30
Table 3.1-4 Helicopter Flight Operations Modeled for Existing Helistop 33
Table 3.1-5 Noise Exposure from Emergency Operations at Existing Helistop 34
Table 3.1-6 Emergency Flight Operations Modeled for Alternative 7RA Helistop Location 35
Table 3.1-7 Noise Exposure from Helicopter Operations at Alternative 7RA Helistop Location 35
Table 3.1-8 Noise Exposure from Helicopter Operations at Ground Location 1 38
Table 3.1-9 Comparison of Noise Levels for Existing, Alternative 7R and Ground Location 1 39
Table 3.1-10 Noise Exposure from Emergency Operations at Interim Location 2 41
Table 3.1-11 Noise Exposure from Emergency Operations at Helistop Future Location 3 42

Table 3.1-12 Comparison of Noise Levels for Alternative 7RA, Ground Location 1, Interim Location 2, and Future Location 3 43
Table 3.4-1 Construction Truck Traffic 49
Table 3.4-2 Unmitigated Parking Demand and Supply 52
Table 3.4-3 Unmitigated Parking Demand and Supply 53
Table 3.4-4 Four Year Comparison: Total Critical Care Transport to Seattle Children's 54
Table 3.5-1 Proposed Landscaping Impacts and Proposed Improvements 55
Table 3.5-2 Revised Summary of Tree Protection and Removal 57

List of Figures

Figure 1-1 Development Phases Identified in the Compiled Master Plan 2
Figure 1-2 Proposed Helistop Location 3
Figure 2-1 Existing Site Plan 14
Figure 2-2 Proposed and Future Helistop Locations 21
Figure 3.1-1 Modeled Flight Tracks for Existing Helistop 29
Figure 3.1-2 Proposed and Future Helistop Locations 32
Figure 3.1-3 Ground Location 1 Typical Flight Tracks 37
Figure 3.2-1 Grade Level Helistop Light Array 46
Figure 3.2-2 Phase 1 Helistop Light Array 47

Section 1 – Project Summary

1.1 PROPONENT AND PROJECT LOCATION

Proponent

The Relocation of Existing Helistop project is proposed by Seattle Children's Hospital (Children's).

Project Location

The site of the proposed relocated helistop is on Children's campus in northeast Seattle. The relocated helistop would be located in the western area of the expanded campus, on land previously used for the Laurelon Terrace Condominiums, north of the Phase I Development Project.

1.2 RELATIONSHIP OF PROPOSED PROJECT TO APPROVED MAJOR INSTITUTION MASTER PLAN

In April 2010, the Seattle City Council adopted Children's *Major Institution Master Plan* (MIMP) (Ordinance #123263). As approved, the plan is intended to provide a long-range facility plan to guide Children's programmatic and capital decision-making processes for the next 20 years or more. The MIMP established the standards, general location and size of development that is authorized. The MIMP included four phases totaling 1,225,000 square feet of additional space.

The approved MIMP was based on Alternative 7R of the FEIS. Phase 1 of Alternative 7R was identified in the MIMP as the demolition of the 136-unit Laurelon Terrace Condominiums, the construction of 592,000 square feet of a new L-shaped building containing both additional hospital beds and a new emergency department, and the addition of 300 surface parking spaces. The existing helistop located north of the Emergency Department was shown to be located on the top of the Phase 1 building. Phase 1 was identified in the MIMP as being located within the northern portion of the campus expansion area. Figure 1-1 shows the location of the four phases of development identified in the MIMP, and the location of the helistop approved in the MIMP (based on Figure 24 Master Plan in the Compiled Master Plan dated May 12, 2010).

Children's has an approved MUP to construct, as Phase 1, a 7-story structure (above-grade) with one partial below-grade floor and one floor below-grade, without a helistop located on top of the building. The building will contain approximately 267,268 square feet of above-grade floor area and 52,760 square feet of below-grade developable area, for a total of 320,018 gross square feet of developable area. The building will house inpatient beds on the upper 6 floors and lobby space, patient care and mechanical on one above-grade floor. The relocated emergency department and lobby space will be located on the partial below-grade floor, and the kitchen, loading dock, and mechanical rooms on the below-grade floor. As part of the Phase 1 MUP Application, Children's proposed a new surface parking lot containing 201 parking spaces to be constructed north of the new building.

Children's is now proposing to relocate the existing helistop to a ground location north of the Phase 1 development as shown in Figure 1-2, Proposed Helistop Location. The ground location is 46 feet to the south and 58 feet to the east of the location identified in the Final Master Plan.

STATISTICS

Hospital Campus	
Beds	500 - 600*
Building gross floor area	2.125 million gsf
Parking spaces	3,100
FAR	1.9

*addition of 250 - 350 beds

LEGEND

- Property Line
- Campus Grounds
- Existing Buildings and Parking Garage
- Lower Buildings and Parking Garages
- Taller Buildings
- Covered Walkway
- Roadways and Surface Parking
- 1 Construction Sequence
- H Helicopter
- Service and Fire Access

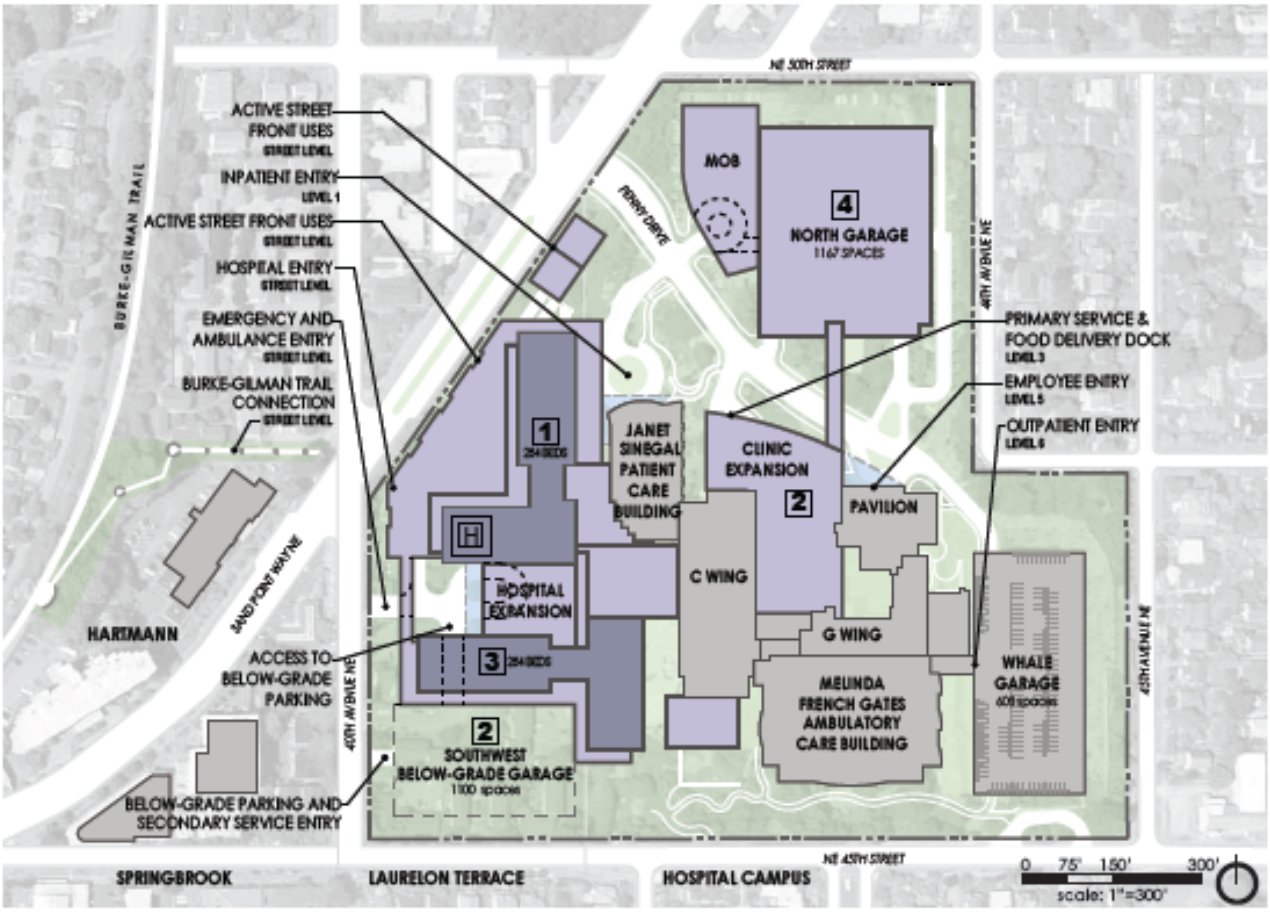


Figure 1-1
Development Phases Identified in the Compiled Master Plan

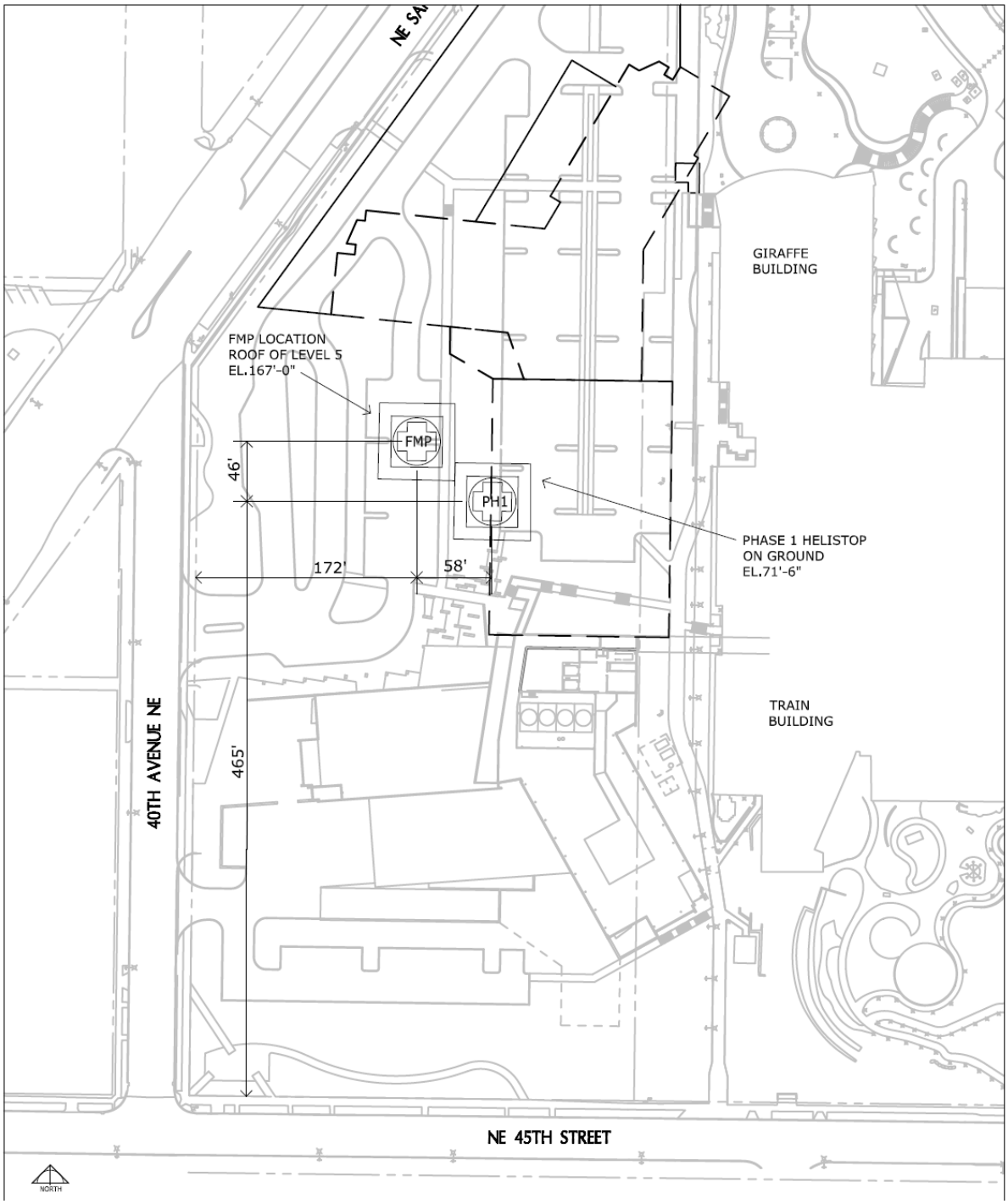


Figure 1-2
Proposed Helistop Location

Comparison with Impacts Disclosed in Environmental Impact Statement

Children's has an existing approved helistop located north of the Emergency Department south of Penny Drive. The approved MIMP identified that the helistop would be moved to a location on top of what was described as Phase I in the Final Master Plan (FMP) and Compiled Master Plan (CMP). For the purpose of comparing the impacts of the proposed relocated helistop with the impacts that were disclosed in the Draft, Final, and Revised Final Environmental Impact Statement (EIS), the Addendum analysis compares the current proposal with the location of the helistop in Alternative 7R that was approved by the City Council in the MIMP.

Children's is proposing that the relocated helistop remain at the ground location north of the Phase 1 Development Project until plans are developed for the Diagnostic and Therapeutic (D&T) Building. This building is anticipated to be located north of the Phase 1 Development Project and would likely be constructed in seven to ten years. As part of the analysis and separate MUP application prepared for the future D&T building, Children's will propose a permanent location for the helistop. Children's has stated that they will include in their D&T Building MUP application, a request for City approval to move the helistop from the ground location to a temporary location on top of the Phase 1 Development building, and then to a permanent location on top of the D&T building. To the extent they are known at this time, the potential environmental effects of the future relocations are analyzed in this Addendum as a future condition.

Table 1-1 summarizes the physical differences of the helistop location on the top of the Phase 1 building described in the Compiled Master Plan and analyzed in the EIS and the ground location as it is now proposed by Children's.

Table 1-1
Comparison of Helistop Locations

	Rooftop Location in Compiled Master Plan (CMP) Phase 1	**Proposed Ground Location**
Location	Rooftop of Phase 1	Ground Location
Elevation	El. 167'-0"	El. 71'-6" (95.5' lower than CMP location)
Distance North of NE 45th Street	511' (to center of helistop)	465' (to center of helistop) (46 feet nearer than CMP location)
Distance East of 40th Avenue NE	172' (to center of helistop)	230' to center of helistop) (58' farther east than CMP location)

The proposed relocation of the helistop was contemplated by and is consistent with Children's approved MIMP. This Addendum evaluates the difference in impacts resulting from locating the helistop on the ground as compared to the rooftop location described in the EIS.

Table 1-2 summarizes the amount of square footage that was approved in the MIMP, the square footage and percentage of existing development (using the area calculation method proscribed in the 2010 MIMP), the square footage and percentage approved for Phase 1 and the amount remaining for future development. The proposed helistop relocation does not change the area approved for development.

With the approved Phase 1, the area that has been constructed or is proposed for construction under the MIMP would total 1,181,547 square feet, or 56 percent of the allowable area.

Table 1-2
MIMP Development to Date

	Approved in MIMP	**Constructed (adjusted)**[3]	**Approved** Phase 1 **Project**	**Future Development**
Building Square Footage	2,125,000	861,519	320,028	943,453
Percentage of MIMP Approved	(100%)	41%	15%	
Percentage of square footage constructed or proposed to date		56%		
Percentage remaining for future development				44%
Floor Area Ratio (FAR)[4]	1.9	1.12		

1.3 SUMMARY OF SITE-SPECIFIC ENVIRONMENTAL INFORMATION

Table 1-3 summarizes potential environmental impacts disclosed in the EIS and additional site-specific information for the helistop relocation. It should be noted than these additional site-specific impacts can be mitigated to a level that is less than significant. Mitigation measures are listed in Table 1-4.

No new Significant or Unavoidable Adverse Impacts, or new Secondary and Cumulative Impacts, have been identified.

[3] Existing developed area has been recalculated using the method proscribed in the 2010 MIMP. Council Condition 1 of Ordinance 123263 states: "*1. Total development on the existing and expanded campus shall not exceed 2,125,000 gross square feet, excluding above and below grade parking and rooftop mechanical equipment.*"

[4] Existing FAR has been recalculated using the method proscribed in the 2010 MIMP. Council Condition 2 of Ordinance 123263 states: "*2. The Floor Area Ratio (FAR) of the expanded campus shall not exceed 1.9, excluding below grade developable floor area, below-grade parking structures and rooftop mechanical equipment..*"

Table 1-3
Summary Comparison of Impacts Disclosed in EIS for the Operation of the Helistop with Site-Specific Information

Environmental Element	Impacts Previously Disclosed in EIS	Impacts Disclosed in the Phase 1 Development Addendum	Site-Specific Information Provided in this Addendum
Noise	The increase in DNL or SEL relative to the existing condition would be 2 dB or less at all 10 receptors with many receptors experiencing a decrease. Due to the decreased building shielding, the increase in Lmax would be up to 4 dB at receptors R3 through R5, R9, and R12. Lmax would decrease by 1 to 5 dB at receptors R6 through R8, and R11. R10 would experience no measurable change in Lmax. Because the Alternative 7R helistop was proposed to be approximately 40 feet higher than the existing pad, aircraft that overfly receptors would do so at a higher altitude, decreasing their noise exposure. In addition, the westward shift of the helistop would shift the flight tracks farther away from R6, R7, and R11. If the helistop location were not moved (and no construction occurred), DNL would increase by 1 dB solely due to the increase in average daily flight operations relative to the existing conditions.	No new impacts were disclosed. The Phase 1 project did not include relocating the existing helistop.	For the proposed Ground Location 1, the maximum increase in Busiest Day DNL relative to the existing condition would be 4 dBA or less at 2 of the 12 receptors and decrease up to 4 dBA at 10 receptors. The maximum increase in SEL relative to the existing condition would be 7 dBA or less at 2 of the 12 receptors and decrease up to 9 dBA at 8 receptors. The maximum increase in Busiest Day DNL and maximum SEL would be 4 dBA and 4 dBA respectively for receptor R14. Lmax would increase by 7 dBA at receptor 14 and decrease by 9 dBA at receptor R13. For Interim Location 2, the maximum increase in Busiest Day DNL relative to the existing condition would be 5 dBA or less at 6 of the 12 receptors and decrease up to 4 dBA at 3 receptors. The maximum increase in SEL relative to the existing condition would be 2 dBA or less at 2 of the 12 receptors and decrease up to 5 dBA at 7 receptors. The maximum increase in Busiest Day DNL and SEL would be 3 dBA and 5 dBA respectively for receptor R14. L_{max} would increase by 5 dBA at receptor 14 and decrease by 6 dBA at receptor R6. For Future Location 3, the maximum increase in Busiest Day DNL relative to the existing condition would be 3 dBA or less at 3 of the 12 receptors and decrease up to 4 dBA at 8 receptors. The maximum increase in SEL relative to the existing condition would be 2 dBA or less at 2 of the 12 receptors and

Table 1-3 (Continued)
Summary Comparison of Impacts Disclosed in EIS with Site-Specific Information

Environmental Element	Impacts Previously Disclosed in EIS	Impacts Disclosed in the Phase 1 Development Addendum	Site-Specific Information Provided in this Addendum
			decrease up to 6 dBA at 10 receptors. The maximum increase in Busiest Day DNL and maximum SEL would be 3 dBA for receptors R8 and R14. L_{max} would increase by up to 4 dBA at receptor 4 and decrease by 6 dBA at receptor R6.
Light and Glare	Each alternative would likely generate typical stationary sources of light including interior lighting, pedestrian level lighting (along proposed sidewalks, entryways) and illuminated signs. Specific information relative to stationary building fixtures and signage would be provided as part of the construction-level plans associated with the Building Permit process. At times during the construction period, required area lighting of the job site would be provided, and lighting would be directed away from residences as much as possible. Light and glare from the alternatives is not expected to cause safety hazards. The buffer would continue to block adjacent areas from light and glare. More specific glare analysis will be conducted further into the design process.	No new or significantly different impacts have been identified. Overall, Phase 1 would result in aesthetic impacts comparable to or less than those described for Alternative 7R in the FEIS. It is anticipated that the proposed Phase 1 would result in similar light, glare and shadow impacts than were described in the FEIS for Alternative 7R due to the similar building height and orientation, with the exception that no impacts would occur from the Hartmann property.	The lighting design will include a number of features that will minimize light and glare impacts. These features include: • Reducing glare by using shielded full cut-off luminaries and directing illumination away from adjacent properties. • Reducing sky-lighting by eliminating the use of up-lighting between the hours of 11:00 PM and 5:00 AM. • No uplighting at the helistop. • Lighting would be turned on when the hospital is notified of a pending transfer. The lights would remain on until the helicopter has departed. • The helistop will be connected to the new Emergency Department via a 10-foot wide paved pathway. The pathway would be lit only during times of patient transport. All lights are chosen and positioned to minimize glare and to be the lowest wattage possible. This minimal lighting strategy is used to maintain pilots' night vision. However, this strategy also helps minimize impacts to surrounding uses.

Table 1-3 (Continued)
Summary Comparison of Impacts Disclosed in EIS with Site-Specific Information

Environmental Element	Impacts Previously Disclosed in EIS	Impacts Disclosed in the Phase 1 Development Addendum	Site-Specific Information Provided in this Addendum
Helicopter Trips	On average, Children's experiences three to four daytime landings and one to two nighttime landings per month. For the last five years, the average has been 60 landings per year. Using a standard population/use rate methodology to project future helicopter air ambulance patient landings at Children's, the projected landings per year are 62 by 2010, 71 by 2020, and 77 by 2030.	No information on helicopter landings was included in the Phase 1 Addendum as the relocation of the helistop was not part of the Phase 1 project.	Data from 2009 confirmed the previous years' averages of three to four daytime landings and one to two nighttime landings per month. The total landings for 2009 were 60[5], as compared to the average of 51 landings per year for years 2005 – 2009. For years 2000 – 2009, the average number of landings per year was 54. The annual numbers ranged from lows of 36 landings in 2000 and 35 landings in 2007 to highs of 71 landings in 2002 and 68 landings in 2004. Data for the first six months of 2010 (January to June) showed a total of 25 landings, with an average of two daytime landings and two to three nighttime landings (between 7 pm and 6 am). For the six month period, 13 landings occurred during nighttime hours. Two months (January and May) had a total of 6 landings in each month, and on two days (January 28 and May 12), there were two landings. April had the fewest number of landings, with two landings, one of which was during the nighttime hours. Future projections of landings are expected to be the same as or less than disclosed in the EIS (62 by 2010, 71 by 2020, and 77 by 2030). Relocating the helistop is not anticipated to have an affect on the number or timing of helistop landings at Children's.

[5] This number varies from the number shown for FY 2009 in Table 3.4-4, as it is based on the calendar year of January 1 to December 31, and the data in Table 3.4-4 is based on a fiscal year of October 1 to September 30.

Table 1-3 (Continued)
Summary Comparison of Impacts Disclosed in EIS with Site-Specific Information

Environmental Element	Impacts Previously Disclosed in EIS	Impacts Disclosed in the Phase 1 Development Addendum	Site-Specific Information Provided in this Addendum
Parking	With Phase 1 of Alternative 7R, 300 new spaces were proposed, increasing the on-campus parking supply to 1,762. With the 580 off-site leased spaces, the total parking supply would be 2,342 spaces. The estimated unmitigated demand was 2,300 spaces, indicating that the proposed parking supply would provide a surplus of 42 spaces. No parking impacts were anticipated. The parking demand has been recalculated using the same method used for the proposed Phase 1 demand for this Addendum, and Children's has increased the number of spaces it leases off-site to 740 spaces. Using this refined method, the unmitigated demand has been revised to 2,500 spaces, and the total parking supply of 2,502 spaces would provide a surplus of 2 spaces, effectively matching the unmitigated demand. No impacts were identified.	Phase 1 would include 201 new surface spaces, increasing the on-campus parking supply to 1,663. The anticipated unmitigated parking demand is 2,200 spaces, requiring Children's to continue leasing spaces off site. If Children's were to continue leasing 740 spaces, the combined parking supply of 2,403 spaces would fully accommodate the Phase 1 parking demand. The parking demand for Phase 1 is less than estimated for Phase 1 of Alternative 7R and may allow Children's to reduce the number of spaces it leases off site.	Locating the helistop on the ground location north of the new Phase 1 Development would require the elimination of 11 of the planned 201 new surface spaces, resulting on an on-campus parking supply of 1,652 parking spaces. The anticipated unmitigated parking demand is 2,200 spaces, requiring Children's to continue leasing spaces off site. If Children's were to continue leasing 740 spaces, the combined parking supply of 2,392 spaces would fully accommodate the parking demand.
Plants	Alternative 7R would result in the need to remove, relocate and/or replant trees that exist on the Laurelon Terrace site.	Children's has surveyed trees within the expanded campus area and has identified trees that would be potentially affected by Phase 1 development on Plan Sheet L0.01 in the MUP application. There are 92 trees or shrubs shown on Plan Sheet L0.01. Of these 92 trees or shrubs, four trees have been identified as "exceptional" due to their large size, and an additional 20 trees or shrubs have been identified as "exceptional" due to being located in a grove or group. Of the 24 "exceptional" trees or shrubs, 22 are proposed to be protected in plan. Of the two to be removed, one is an unregulated Redtip Photinia. One tree to be removed is considered "exceptional", and 25" caliper Red Maple. A registered	The number of exception trees and shrubs has been reduced by the City of Seattle to a total of 20. All 20 will be protected in place and not affected by the relocation of the helistop. The helicopter flight path to a ground-based helistop will require trees that will not achieve tall mature heights. See plan sheet L1.00 of the MUP Application submittal includes a listing of proposed landscaping that will surround the helistop.

Table 1-3 (Continued)
Summary Comparison of Impacts Disclosed in EIS with Site-Specific Information

Environmental Element	Impacts Previously Disclosed in EIS	Impacts Disclosed in the Phase 1 Development Addendum	Site-Specific Information Provided in this Addendum
		arborishas evaluated both the anticipated effects of proposed construction on the viability of the tree and performed a hazardous tree assessment. The tree was found to have signs of both internal and root decay and it was determined it is not feasible to move the tree.	
	New landscaping is proposed.	New landscaping is proposed. See mitigation measures.	New landscaping is proposed. See mitigation measures.

FEIS – Final Environmental Impact Statement
LOS – Level of Service
MUP – Master Use Permit
SDOT – Seattle Department of Transportation
SOV – single-occupancy vehicle
TMP – Transportation Management Program
WSDOT – Washington State Department of Transportation

Table 1-4
Summary of Mitigation Measures

Environmental Element	Mitigation Measures
Noise	Helicopter flights are only used when the time saved in transporting an ill child would make a critical difference in the child's care and recovery. Mitigation measures were established in Seattle City Council's conditional use permit for the existing helistop.
Light and Glare	The lighting design will include a number of features that will minimize light and glare impacts. These features include: • Reducing glare by using shielded full cut-off luminaries and directing illumination away from adjacent properties. • Reducing sky-lighting by eliminating the use of up-lighting between the hours of 11:00 PM and 5:00 AM. • No uplighting at the helistop. • Lighting would be turned on when the hospital is notified of a pending transfer. The lights would remain on until the helicopter has departed. • The helistop will be connected to the new Emergency Department via a 10-foot wide paved pathway. The pathway would be lit only during times of patient transport. All lights are chosen and positioned to minimize glare and to be the lowest wattage possible. This minimal lighting strategy is used to maintain pilots' night vision. However, this strategy also helps minimize impacts to surrounding uses. No additional mitigation measures are required.
Transportation and Parking	The Seattle City Council, in Ordinance No. 123263 dated April 5, 2010, imposed conditions as part of its approval of the Children's MIMP, however none of those conditions relate directly to the helistop location or its operation. No additional mitigation measures are required for the relocation of the helistop.
Plants	The mitigation proposed for the Phase 1 Development is adequate to compensate for the loss of existing vegetation on the western portion of the expanded campus. No additional impacts would result from the relocation of the helistop and no additional mitigation measures are needed.

CMP – Construction Management Plan
CO – carbon monoxide
DPD – Department of Planning and Development
LEED – Leadership in Energy and Environmental Design
MIMP – Major Institution Master Plan
MUTCD – Manual on Uniform Traffic Control Devices
PSCAA – Puget Sound Clean Air Agency
ROW – right of way
SDOT – Seattle Department of Transportation
SEPA – State Environmental Policy Act
SF – square feet
SMC – Seattle Municipal Code
SOV – single-occupancy vehicle
TMP – Transportation Management Program
WSDOT – Washington State Department of Transportation

Section 2 – Project Description

2.1 PROJECT PROPONENT

The project proponent for the proposed *Relocation of Existing Helistop Project* is Seattle Children's Hospital.

2.2 PROJECT LOCATION AND PARKING

Project Location

Children's campus is located in northeast Seattle. The campus comprises approximately 28.84 acres, bounded by NE 50th and NE 47th Streets on the north, NE 45th Street on the south, 44th Avenue NE and 45th Avenue NE on the east, and 40th Avenue NE and Sand Point Way on the west.

Children's building complex is currently situated primarily in the south central portion of the campus, with parking on the northern and eastern portions of the campus. The entire complex contains approximately 861,519 square feet of gross floor area and includes the hospital's admitting area, clinics, patient rooms, surgery center, emergency rooms, and ancillary support services.

Children's has received an approved MUP (#3011377) to construct the Phase 1 Development on the western portion of the newly expanded campus. Phase 1 was shown to have surface parking north and south of the new building. As shown on Figure 1-2 in Section 1, the site of the proposed *relocated helistop* would be on the ground north of the approved Phase 1 Development.

Access by Emergency Vehicles and Helicopters

Patients requiring emergency care are brought to Children's by ambulance or passenger vehicles and by helicopter. Vehicles currently access the emergency department via Sand Point Way NE and Penny Drive. The approved Phase 1 will include moving the emergency department access to 40th Ave NE (Figure 1-2 in Section 1).

Helicopters currently land outside of the emergency department on an emergency helicopter landing stop (helistop) (shown on Figure 2-1 with an "H"). The approved MIMP identified that the helistop would be moved to the top of what was identified as Phase 1 in the Compiled Master Plan. The location of the proposed first phase of development has been moved to a location farther south on the western portion of the expanded campus. Children's is now proposing that the helistop be located temporarily on the ground north of the new Phase 1 Development, and remain in that location until plans are developed for the Diagnostic and Therapeutic (D&T) Building. This building is anticipated to be located north of the Phase 1 Development Project and would likely be constructed in seven to ten years. As part of the analysis and separate MUP application prepared for the future D&T building, Children's will propose a permanent location for the helistop. Children's has stated that they will include in their D&T Building MUP application, a request for City approval to move the helistop from the ground location to a temporary location on top of the Phase 1 Development building, and then to a permanent location on top of the D&T building.

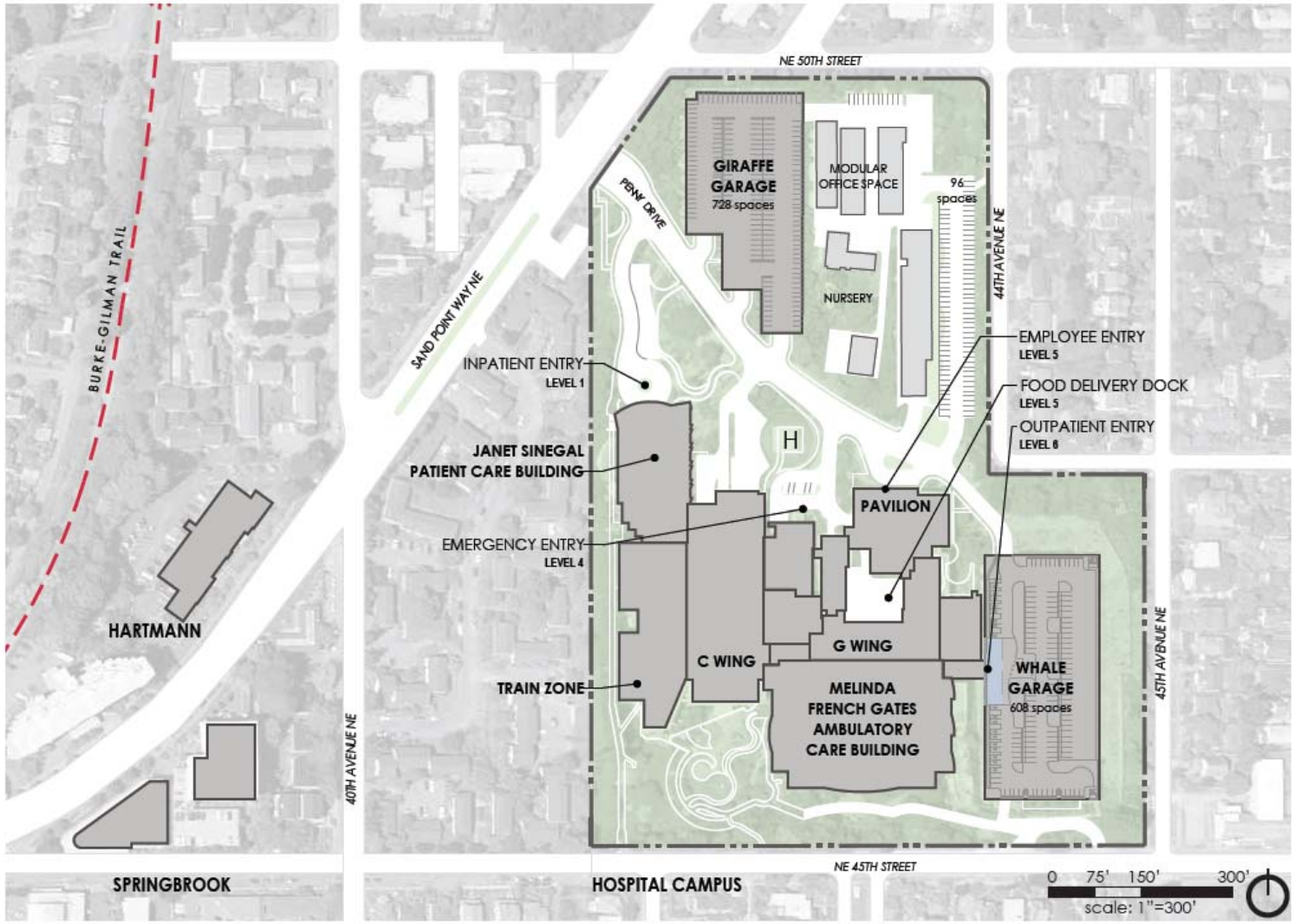


Figure 2-1
Existing Site Plan

On-Campus Parking

Existing parking facilities on campus include both structured and surface parking. The hospital has two parking garages – Giraffe Parking (parking structure closest to the project site), which is located in the north portion of the campus and the Whale Parking structure in the southeast corner of campus. A surface parking lot is located in the northeast portion of the campus (referred to as the Lot 4 parking area). As described in the EIS, the parking supply on campus is approximately 1,462 spaces – comprised of 728 spaces in the Giraffe Garage, 126 spaces in surface lots, and 608 parking spaces in the Whale Parking Garage. The total parking supply is 2,182 spaces, including the on campus parking, 80 spaces at the Hartmann property across Sand Point Way, and 640 parking spaces leased at remote lots (Magnuson Park, Archives, and church) (See Figure 3.10-7 rev in the FEIS). As part of the approved Phase 1 Development, approximately 201 surface parking spaces were identified to be located immediately north and south of the new building. The proposed ground location for the helistop will require a reduction of 11 surface parking spaces in the lot north of the Phase 1 Development, reducing the new surface parking supply to 190 spaces.

2.3 BACKGROUND INFORMATION

The following provides an overview of the services that are provided by Seattle Children's Hospital, together with general information concerning the hospital's MIMP and the environmental analysis that has occurred for the MIMP.

Scope of Services – Seattle Children's Hospital

Children's was founded in 1907 as the first orthopedic facility for children on the West Coast. The initial site of the hospital was in a wing of Seattle General Hospital on Seattle's Capitol Hill. The following year the hospital moved to its own facility on Queen Anne Hill and in 1911 moved to an adjacent site and opened a 40-bed hospital. In 1953, Children's moved to its present location in Northeast Seattle.

Children's stated mission:

***Mission*:** Children's believes all children have unique needs and should grow up without illness or injury. With the support of the community and through their spirit of inquiry, Children's will prevent, treat and eliminate pediatric disease.

Growth in Need for Services: Over the past decade, Children's has continued to serve a growing number of children as the population of the region has grown. As medical technology and expertise has advanced, Children's has been able to develop a greater ability to treat children with complex, life threatening diseases. According to Children's, today Children's is operating at unprecedented levels, ranging from 85% to 100% occupancy year-round as compared to the national standards of care which set optimal occupancy rates for pediatric specialty hospitals at 65%.

During 2008, the emergency department experienced a 22% increase in visits, with one in five of those visits resulting in admission to the hospital. Additionally, 50 of the hospital's 200 rooms currently have two inpatient beds, which makes preventing the spread of infectious disease more difficult, reduces privacy, and makes it more challenging to provide family-centered care.

The proposed Phase 1 would provide 192 new patient beds. Children's currently has 250 beds in 200 rooms. With Phase 1, most of those rooms with double beds will be converted to single-bed rooms. The overall net gain in beds will be 137, for a total of 387 beds.

A new 34,000 square foot emergency department will replace the existing 14,500 square foot emergency department.

Major Institution Master Plan and Associated Environmental Analysis

1994 MIMP

- A Draft EIS was prepared for Children's MIMP and issued by the Seattle Department of Design, Construction and Land Use (DCLU) on October 15, 1992[6]. That Draft EIS evaluated the environmental impacts associated with development of 16 projects totaling approximately 263,680 square feet of new development.[7] Nine major environmental parameters were evaluated in the Draft EIS, including: air, stormwater runoff, energy, environmental health/noise, land use/population, light/glare/shadows, aesthetics, transportation/parking, and public services/utilities.

- A Final EIS was prepared for the MIMP and issued by DCLU on June 17, 1993[8]. The Final EIS evaluated the environmental impacts associated with development of approximately 262,630[9] square feet. The Final EIS provided additional environmental analysis relative to noise, light/glare/shadows, aesthetics, and transportation/parking. DCLU found that the EIS (Draft and Final) adequately disclosed probable, adverse environmental impacts, discussed reasonable mitigating measures and formed an adequate basis for making final decisions regarding the proposed MIMP.

- The proposed campus master plan that was evaluated in the Final EIS differed slightly from that of the Draft EIS. The modifications were in response to comments and recommendations from the City, the hospital's Master Plan Advisory Committee, public comments, and to address potential environmental impacts that were noted in the Draft EIS.

- As required by Seattle Municipal Code (SMC), a public hearing concerning the proposed MIMP was conducted by Seattle's Hearing Examiner (January 1994). The Hearing Examiner's decision recommended approval of the MIMP.

- In September 1994, the Seattle City Council adopted Children's Hospital & Regional Medical Center's MIMP (Ordinance #117319). As approved, the plan was intended to provide a long-range facility plan to guide Children's programmatic and capital decision-making processes for the next 15 years. The MIMP established the standards, general location and size of development that is authorized.

- An EIS Addendum[10] was issued in 1996 in conjunction with *A and B-Wing Bed Renovations*.

---

[6] Seattle DCLU 1992
[7] Draft EIS, Table 1, pg. 16
[8] Seattle DCLU 1993
[9] This area is 1,050 sq. ft. less than the amount of development noted in the Draft EIS (Draft EIS Table 1, pg. 16 and Final EIS Table 1, pg. 20).
[10] Seattle DCLU, 1996.

- An EIS Addendum[11] was issued in January 2001 for the *Parking Garage* (Whale Parking) and ancillary facilities.

- An EIS Addendum[12] was issued in March 2002 for the *Inpatient Wing*.

- An EIS Addendum[13] was issued in January 2003 for the *Emergency Department/Operating Room* and was later withdrawn.

- An EIS Addendum[14] was issued in June 2003 for the *Ambulatory Care Building*.

2010 MIMP

- A Concept Plan was submitted by Children's to the City's Department of Planning and Development (DPD) on July 16, 2007. Two alternatives were proposed, both increasing the existing 900,000 square footage to a total of 2.4 million square feet. One alternative proposed adding the Hartmann property located on the west side of Sand Point Way with 170,000 gross square feet (gsf), with 2.23 million gsf of development within the existing campus area. The second alternative would have been without the Hartmann property.

- A Preliminary Master Plan was submitted by Children's to DPD on January 7, 2008 in response to comments from DPD, the public and the Citizen's Advisory Committee (CAC). The Preliminary Master Plan contained five alternatives: Alternative 1 No Action; Alternative 2 Initial Concept (same as proposed in the Concept Plan with Hartmann property); Alternative 3 Proposed Major Institution Overlay with Heights (lower heights than shown for Alternative 2); Alternative 4 Expanded Boundary Major Institution Overlay with Heights (expanded campus to include Laurelon Terrace property); and Alternative 5 North Campus Expansion (increased heights on northern campus without any expansion to Laurelon Terrace site.

- A Draft Master Plan was submitted by Children's to DPD on June 9, 2008. The Draft Master Plan eliminated Alternatives 2, 4 and 5, and included two new alternatives: Alternative 6 Modified North Campus Expansion (lower heights on the north campus without any expansion to Laurelon Terrace); and Alternative 7 Expanded Boundary (Early Laurelon Terrace Development) (lower heights on the main campus with the bulk of new development in the expansion area).

- A Draft EIS was prepared for Children's MIMP and issued by DPD on June 8, 2008. That Draft EIS evaluated the environmental impacts associated with development of Alternatives 3, 6 and 7 as described in the Draft Master Plan, each totaling approximately 1.5 million gsf in new development. Eleven major environmental parameters were evaluated in the Draft EIS, including: geology, air, stormwater runoff, energy, noise, hazardous materials, land use, housing, aesthetics/light, glare, and shadows, transportation/parking, and public services/utilities.

---

[11] Seattle DCLU, 2001.
[12] Seattle DCLU, 2002.
[13] Seattle DCLU, 2003a.
[14] Seattle DCLU, 2003b.

- A Preliminary Final Master Plan was submitted by Children's to DPD in August 2008. In the Preliminary Final Master Plan, Alternative 7 was modified to revise heights and setbacks, and a new alternative, Alternative 8, was added. Alternative 8 included the expansion area of Laurelon Terrace, but without the Hartmann property.

- A Final Master Plan was submitted by Children's on October 29, 2008 for publication on November 10, 2008. The Final Master Plan contained only the Proposed Master Plan, a design based on the Alternative 7R. This alternative proposed expanding the campus to include both the Laurelon Terrace property and the Hartmann property. Approximately 150,000 gsf of development were proposed for the Hartmann property, and 1.35 million gsf were proposed for the campus, for a total addition of 1.5 million gsf.

- A Final EIS was prepared for the Final Master Plan and issued by DPD on November 10, 2008. The Final EIS evaluated the environmental impacts associated with development of approximately 1.5 million gsf. The Final EIS provided additional environmental analysis relative to noise, light/glare/shadows, aesthetics, and transportation/parking for the revisions to Alternative 7 and for the addition of Alternative 8. DPD found that the EIS (Draft and Final) adequately disclosed probable, adverse environmental impacts, discussed reasonable mitigating measures and formed an adequate basis for making final decisions regarding the proposed MIMP.

- On December 11, 2008, DPD issued an errata to the FEIS containing an additional comment letter, and locations in the November 10, 2008 FEIS where the same or similar comments were made and a response provided.

- In May 2009, DPD issued a Revised Final EIS[15] limited to only new information provided on land use (Section 3.7) and housing (Section 3.8) developed in response to the Hearing Examiner's finding of inadequacy on those two issues only. The Hearing Examiner subsequently found the EIS to be adequate.

- As required by SMC, public hearings concerning the proposed MIMP were conducted by Seattle's Hearing Examiner (March and July 2009). The Hearing Examiner's decision recommended denial of the MIMP.

- In April 2010, the Seattle City Council adopted Seattle Children's Hospital's MIMP (Ordinance #123623). As approved, the plan is intended to provide a long-range facility plan to guide Children's programmatic and capital decision-making processes for the next 20 years or more. The MIMP established the standards, general location and size of authorized development. The MIMP included four phases totaling 1,225,000 square feet of additional space.

- An EIS Addendum was issued on August 12, 2010 for the proposed *Phase 1 Development Project*.[16]

This EIS Addendum provides additional site-specific information concerning the proposed helistop relocation project – to add to and/or update information contained in Final EIS and the August 2010 Addendum for Children's MIMP.

---

[15] Seattle DPD 2009
[16] Seattle DPD 2010

Communications with Surrounding Community

The approved MIMP was developed through the work of dedicated community representatives meeting with the City of Seattle and Children's. The Master Plan CAC, staffed in conjunction with the City of Seattle's Department of Neighborhoods, met regularly throughout the planning process. From summer 2007 through early 2009, the CAC held 26 meetings, meeting approximately once per month. CAC input affected the development of the Draft and Final Master Plan and EIS, as Children's modified its initial concept plan in response to CAC comments and concerns. Subsequently, in response to the CAC's formal comments on the Draft Master Plan and Draft EIS, Children's made substantial changes to the Final Master Plan, and DPD updated its Final EIS (see Appendix E of the Final EIS for the CAC's comment letter). This committee is currently being replaced by the Master Plan Standing Citizen Advisory Committee.

Children's submits an annual report to DPD relative to activity associated with implementation of their MIMP. Children's has an extensive transportation management program (TMP), which continues to meet City requirements and has received awards for innovation and results. The annual results on the TMP achievements are included in the annual MIMP report.

Children's takes many steps to maintain close communication with its neighbors about on-going operations, construction, and future development at the hospital. On an on-going basis, Children's works with individual neighbors, neighborhood organizations, and community advisory committees to foster effective communication and to be responsive to community questions and concerns. The purpose of such efforts is to be a good neighbor, to work collaboratively with neighbors on projects of mutual benefit, and to mitigate adverse impacts of hospital construction and operations on the neighborhood to the greatest degree possible.

Children's most immediate neighbors bordering the campus receive frequent communication with Children's staff through attendance at local organization board meetings and by telephone, e-mail, and informal meetings with individual neighbors, representatives of the Laurelhurst School, local businesses, and other institutions. Children's and its contractors work with individuals and groups to implement additional specific mitigation steps whenever needed and feasible to address impacts of hospital operations and construction.

Children's maintains ongoing communications with the Laurelhurst Community Club through a variety of means. Children's meets with a subgroup of the Laurelhurst Community Club board of trustees, and attends their meetings periodically. Children's communicates regularly with the Laurelhurst Community Club via email and telephone, and the Laurelhurst Community Club provides the neighborhood with updates of hospital happenings in their newsletter.

Summary reports about the critically ill children who are transported to Children's emergency helistop are provided to the community, and a review committee, which includes community representatives, meets at Children's to monitor this important program. Children's distributes annual reports and newsletters throughout the community and provides tours of the hospital upon request.

2.4 DESCRIPTION OF THE PROPOSED ACTION

The Proposed Action is the relocation of the existing helistop at Children's to a ground location north of the approved Phase 1 building. See Figure 2-2 for the proposed and future helistop locations.

Helistop Design

The helistop will consist of an approximately 36-foot diameter paved circle marked with an "H." The landing will be approximately 15 feet above the surrounding parking lot. A landscaped berm of an approximately 1:3 slope will separate the helistop from the parking lot. A portion of the area surrounding the landing area may be fenced. If used, the top of the fence will be below the level of the landing area.

Lighting at the helistop would consist of:

- Eight (8), LED perimeter imbedded in the landing area (12.5 watt)
- Four (4) flood (75-watt) attached to the vertical edge of the landing area
- Obstruction lights (LED 57-watt) - locations to be determined
- A lighted wind indicator (150-watt) - location to be determined.

There would be no uplighting at the helistop. All lights are chosen and positioned to minimize glare and to be the lowest wattage possible. This minimal lighting strategy is used to maintain pilots' night vision. However, this strategy also helps minimize impacts to surrounding uses.

Lighting would be turned on when the hospital is notified of a pending transfer. The lights would remain on until the helicopter has departed.

The helistop will be connected to the new Emergency Department via a 10-foot wide paved pathway that will transition to a pedestrian bridge to connect directly to Level A of the building. The doorway from the building to the pedestrian bridge would be secured and used only for transporting patients from the helistop. The pathway would be lit only during times of patient transport.

Helistop Operations

The helistop would operate in the same manner as is used for the existing helistop. A brief description of operation activities is as follows:

Physician Communications

Initial communications concerning patient transport would occur between a physician at the sending hospital and the receiving physician at Seattle Children's. That communication would be necessary to substantiate that the patient has a sufficiently critical medical condition to qualify for transfer not only by helicopter but directly to the hospital rather than to the secondary landing field. The secondary landing field is near the University of Washington's E-1 parking lot located approximately at the corner of NE 45th Street and Five Corners, approximately 0.5 mile west of Seattle Children's.

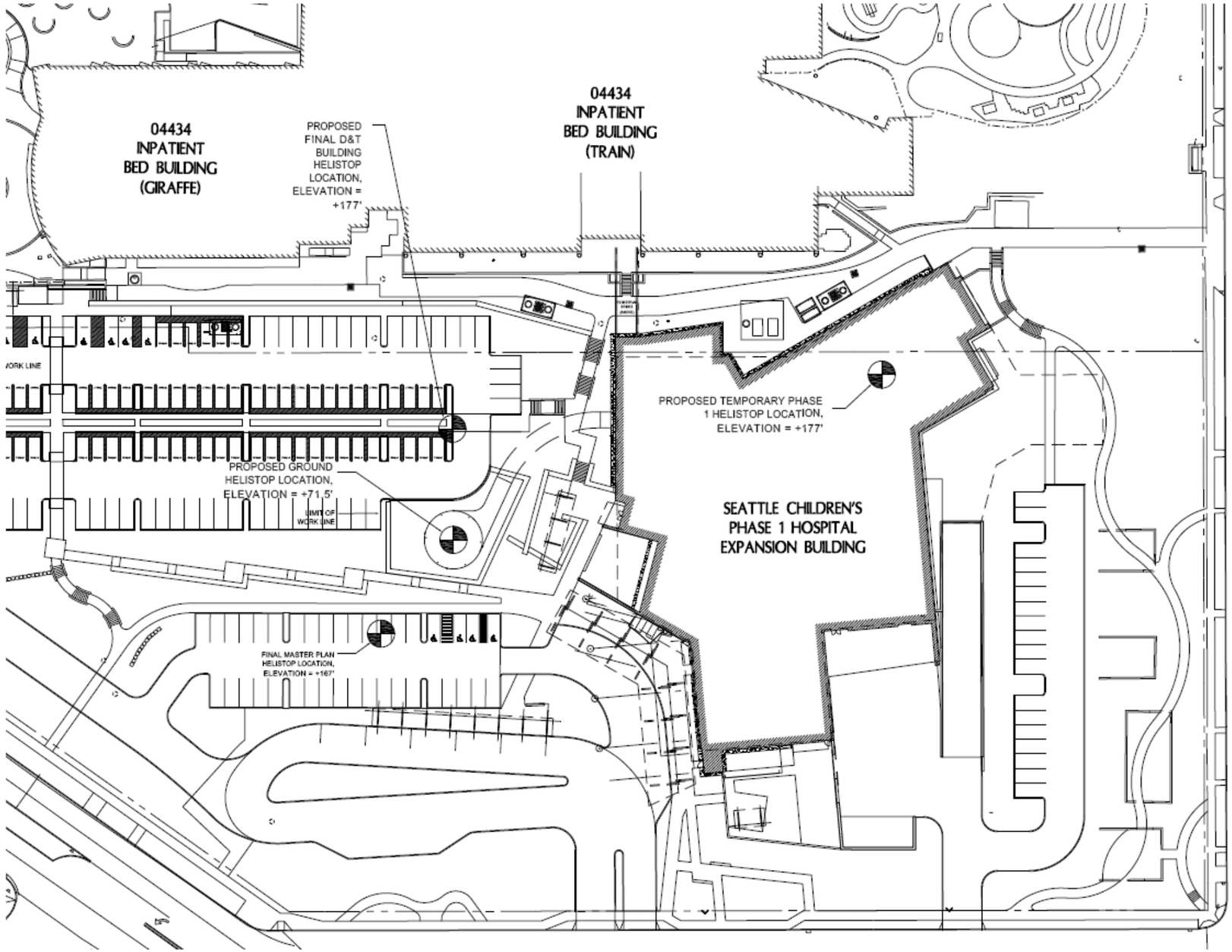


Figure 2-2
Proposed and Future Helistop Locations

Notification of Incoming Flight

Airlift Northwest's dispatch office at Boeing Field would provide notice to the hospital that a helicopter transfer is imminent or in process.

Securing the Helistop Prior to Landing

Upon receiving notice from Airlift Northwest that a helicopter transfer is in process, Seattle Children's security department would secure the helistop. Due to the location of the helistop on the ground and within the surface parking lot area, securing the helistop would require several security personnel. This is similar to the series of actions that is required to be taken now for landings at the existing ground location for the helistop. Actions would include the following:

- Vehicular traffic would be stopped at the entry of the parking lot
- Pedestrian traffic would be stopped as pedestrians approach the parking lot via Giraffe east elevator.
- Pedestrian traffic would be stopped as pedestrians approach the parking lot from the west via walkway from bus stop and ramp.
- Pedestrian traffic would be stopped as pedestrians approach the parking lot from the south via sidewalk.
- A security person would be placed at the entry on Level A to the bridge connection.

Lighting

Lighting at the helistop and pathway would be turned on when the hospital is notified of a pending transfer. The lights would remain on until the helicopter has departed. It is estimated that the lights would be on an average of 1 hour per transfer.

Patient Transfer From Helicopter

After landing, the helicopter's medical crew would transport the patient by gurney via the pathway and bridge to the Emergency Department. The medical crew would brief the Emergency Department staff and transfer the patient to their care within a medical area. The helicopter crew would not transfer responsibility for a patient to a hospital's medical staff at the helicopter.

Amount of Time Helicopter is at the Helistop

The amount of time a helicopter would be at the helistop can vary greatly depending on the patient condition and information needed to brief the Emergency Department staff, but is estimated to average one-half hour. During the time the helicopter is at the helistop, the engines would be shut down.

Lot Coverage and Open Space

As defined in Children's MIMP,[17] lot coverage is a measure of the amount of the hospital campus that is covered by structures[18] and is presented as a percentage of the total lot area. A

[17] Condition 9 of Ordinance 123263
[18] Lot coverage does not include paved surfaces (e.g., walkways, driveways, surface parking, etc.).

minimum of 41% of the combined total area of the expanded campus shall be maintained as open space. With the approved Phase 1, lot coverage will decrease from current conditions (with the Laurelon Terrace Condominiums), but will increase as future development phases are built. Relocation of the helistop to the area approved for surface parking north of the Phase 1 development will not change the amount of lot coverage or open space.

Access to Emergency Room

The existing access to the emergency room entrance is from Penny Drive. The City of Seattle has approved relocating the emergency department to the new Phase 1 building. Access will be from a new access point on 40th Avenue NE to provide more efficient circulation for emergency vehicles and patients. A large covered drop-off area created by the building overhand will provide for patient protection from the weather. This access will not be changed by the relocation of the helistop.

Access from the helistop to the new Emergency Department will be provided via a 10-foot wide paved pathway that will transition to a pedestrian bridge to connect directly to Level A of the building. The pedestrian bridge will be one level above the covered drop-off area and building overhang.

The doorway from the building to the pedestrian bridge would be secured and used only for transporting patients from the helistop.

Construction

It is anticipated that construction of the approved Phase 1 would take approximately 28 months. Site preparation work has started, and site demolition, excavation and construction will begin in the first quarter of 2011.

The timing of construction of the helistop would be dependent on when approval is granted by the City. If approval were to be granted during the time that the Phase 1 construction is occurring, construction of the helistop and access bridge would be done concurrently with the Phase 1 construction.

2.5 FUTURE RELOCATION OF HELISTOP

Children's is proposing that the relocated helistop remain at the ground location north of the Phase 1 Development Project until plans are developed for the Diagnostic and Therapeutic (D&T) Building. This building is anticipated to be located north of the Phase 1 Development Project and would likely be constructed in seven to ten years. As part of the analysis and separate MUP application prepared for the future D&T building, Children's will propose a permanent location for the helistop. Children's has stated that they will include in their D&T Building MUP application, a request for City approval to move the helistop from the ground location to a temporary location on top of the Phase 1 Development building, and then to a permanent location on top of the D&T building. See Figure 2-2 Proposed and Future Helistop Locations.

Section 3 - Additional Information about Environmental Impacts & Mitigation Measures

This document is an Addendum to the Draft[19], Final[20], and Revised Final[21] EISs that were prepared for Children's MIMP in 2008/2009. The EIS evaluated several alternatives and the environmental impacts and mitigation measures associated with each alternative. The Draft, Final, and Revised Final EISs are available for review at DPD as shown in the *Fact Sheet* of this EIS Addendum. Those documents are being adopted for purposes of State Environmental Policy Act (SEPA) compliance.

Pursuant to SEPA Rules[22], an EIS Addendum is an environmental document used to provide additional information or analysis that does not substantially change the analysis of significant impacts and alternatives in existing environmental documents (Washington Administrative Code [WAC] 197-11-706, 197-11-600[4][c]). Existing environmental documents may be used in whole or part to address environmental considerations. The previous proposal and this proposed project need not be identical but must have similar elements that provide a basis for comparing environmental consequences (Revised Code of Washington [RCW] 43.21C.034).

The MIMP Draft, Final, and Revised Final EISs contain detailed environmental analyses relative to each of the environmental parameters noted below:

- Geology
- Air
- Water
- Energy and Natural Resources
- Noise
- Hazardous Materials
- Land Use
- Housing
- Aesthetics/Light, Glare and Shadows
- Transportation and Parking
- Public services and Utilities
- Plants (included in Aesthetics)

This EIS Addendum provides additional or updated information regarding the environmental impacts of the proposed relocation of the existing helistop for noise, light and glare, transportation, parking, and plants.

No new or significantly different impacts have been identified relative to the analysis in the MIMP EIS. In light of the analysis and the similarity of impacts of this proposed helistop relocation to the rooftop location contemplated and evaluated in the MIMP EIS, an Addendum to the existing EIS is the appropriate SEPA document to be used.

---

[19] Seattle DPD 2008a.
[20] Seattle DPD 2008b.
[21] Seattle DPD 2009.
[22] Chapter 197-11 WAC

3.1 NOISE

Impacts Previously Disclosed in the EIS

Noise Metrics

As used in environmental noise analyses, a metric refers to the unit or quantity that quantitatively measures the effect of noise on the environment. To quantify these effects, the Department of Defense and the Federal Aviation Administration use three noise-measuring techniques, or metrics: first, a measure of the highest sound level occurring during an individual aircraft overflight (single event); second, a combination of the maximum level of that single event with its duration; and third, a description of the noise environment based on the cumulative flight and engine maintenance activity. Single noise events can be described with Sound Exposure Level (SEL) or Maximum Sound Level (L_{max}). The cumulative energy noise metric used is the Day/Night Average Sound Level (DNL).

Maximum Sound Level (L_{max})

The highest A-weighted integrated sound level measured during a single event in which the sound level changes value with time (e.g., an aircraft overflight) is called the maximum A-weighted sound level or maximum sound level. During an aircraft overflight, the noise level starts at the ambient or background noise level, rises to the maximum level as the aircraft flies closest to the observer, and returns to the background level as the aircraft recedes into the distance. The maximum sound level indicates the maximum sound level occurring for a fraction of a second. For aircraft noise, the “fraction of a second” over which the maximum level is defined is generally 1/8 second, and is denoted as “fast” response. Slowly varying or steady sounds are generally measured over a period of one second, denoted “slow” response. The maximum sound level is important in judging the interference caused by a noise event with conversation, TV or radio listening, sleep, or other common activities. Although it provides some measure of the intrusiveness of the event, it does not completely describe the total event, because it does not include the period of time that the sound is heard.

Sound Exposure Level (SEL)

Sound exposure level is a composite metric that represents both the intensity of a sound and its duration. Individual time-varying noise events (e.g., aircraft overflights) have two main characteristics: a sound level that changes throughout the event and a period of time during which the event is heard. SEL provides a measure of the net impact of the entire acoustic event, but it does not directly represent the sound level heard at any given time. During an aircraft flyover, SEL would include both the maximum noise level and the lower noise levels produced during onset and recess periods of the overflight. SEL is a logarithmic measure of the total acoustic energy transmitted to the listener during the event. Mathematically, it represents the sound level of a constant sound that would, in one second, generate the same acoustic energy

as the actual time-varying noise event. For sound from aircraft overflights, which typically lasts more than one second, the SEL is usually greater than the Lmax because an individual overflight takes seconds and the maximum sound level (Lmax) occurs instantaneously. SEL represents the best metric to compare noise levels from overflights.

Day-Night Average Sound Level (DNL)

Day-Night Average Sound Level (DNL) is a composite metric that accounts for SEL of all noise events in a 24-hour period. DNL is an average quantity, mathematically representing the continuous A-weighted or C-weighted sound level that would be present if all of the variations in sound level that occur over a 24-hour period were smoothed out so as to contain the same total sound energy. These composite metrics account for the maximum noise levels, the duration of the events (arrivals or operations), and the number of events that occur over a 24-hour period. Like SEL, DNL doesn't represent the sound level heard at any particular time, but quantifies the total sound energy received. While it is normalized as an average, it represents all of the sound energy, and is therefore a cumulative measure.

The inclusion of daytime and nighttime periods in the computation of the DNL reflects its basic 24-hour definition. It can, however, be applied over periods of multiple days. For application to civil airports, where operations are consistent from day to day, DNL is usually applied as an annual average. For some military airbases, where operations are not necessarily consistent from day to day, a common practice is to compute a 24-hour DNL based on an average busy day, so that the calculated noise is not diluted by periods of low activity.

Although DNL provides a single measure of overall noise impact, it does not provide specific information on the number of noise events or the individual sound levels that occur during the 24-hour day. For example, a daily average sound level of 65 dB could result from a very few noisy events or a large number of quieter events.

Noise Modeling Methodology

Wyle Laboratories performed noise analyses regarding existing and proposed Agusta A109[23] emergency helicopter operations at Children's. The A109 is considered a light high-speed twin-engine four-bladed general purpose helicopter with a length of approximately 43 feet, a main rotor diameter of approximately 36 feet and a maximum takeoff weight of approximately 5,400 pounds. Its maximum cruising speed is 165 miles per hour with a maximum climb rate of 1,620 feet per minute (Gunston 1980).

As topography and shielding effects are a concern, Wyle modeled the existing and proposed emergency helicopter operations using the Department of Defense's NOISEMAP Version 7.2 computer program. NOISEMAP can model the effects of ground cover, elevation, and

[23] In October 2009, Airlift Northwest informed URS that they would be adding a new aircraft, the American Eurocopter EC-135 TC. In takeoff and flyover, the EC-135 is anticipated to be 4 to 6 dB quieter than the levels predicted in this analysis for the Agusta A-109. On approach, it may be 1 to 3 dB higher.

shielding, and contains acoustic source data for the subject Agusta A109 helicopter. The existing hospital buildings and the proposed buildings were modeled as landform plateaus. A different elevation and impedance file set was created for each building scenario (existing, interim, and each Build Alternative). Considering only the helicopter noise during departure and arrival, day-night average sound level (DNL), sound exposure level (SEL) and instantaneous maximum sound level (Lmax) were computed for 12 points of interest (noise-sensitive receptors) for four operational conditions associated with the helistop's location.

Helistop Operation

Existing Noise Levels

Flight operations at Children's are relative to the nature of emergency treatment in the region and are unpredictable. On average, Children's typically receives four landings[24] each month with three occurring during the daytime (7:00 am to 10:00 pm) landings and one at nighttime (10:00 pm to 7:00 am). However, emergency flights on a given day have been as frequent as two during the daytime hours and two during the nighttime period.

Two types of DNL were computed: Average Day DNL based on three monthly daytime landings and one monthly nighttime landing, and "Busiest Day" DNL based on two daytime landings and two nighttime landings. Other than the helistop's location, the only differences between the operational conditions were the minor differences in flight tracks and associated flight profiles for each helistop location; numbers of operations on each track were identical for each condition.

Table 3.1-1 shows the two sets of operations counts modeled for this project. The Average Day scenario totals 0.26 average daily operations, while the Busiest Day scenario totals eight average daily operations, with half of those operations during the nighttime period.

Table 3.1-1
Existing Emergency Flight Operations

Scenario	Operation Type	Average Daily Flight Operations		
		Day	**Night**	**Total**
Average Day	Departure	0.10	0.03	0.13
	Arrival	0.10	0.03	0.13
	Total	**0.20**	**0.06**	**0.26**
Busiest Day	Departure	2	2	4
	Arrival	2	2	4
	Total	**4**	**4**	**8**

Note: Daytime is from 7:00 am until 10:00 pm, nighttime is from 10:00 pm until 7:00 am.

Table 3.1-2 lists the calculated noise exposure values for 12 modeled receptors. In addition to the 10 receptor locations previously modeled by URS, Wyle also modeled Receptor Location R1 (4720-24 44th Avenue NE) and Receptor Location R2 (4530 45th Avenue NE) from the 1991 FEIS for direct comparison, and they are shown below as R11 and R12. Among the 12 receptors, DNLs range from 35 dBA to 63 dBA, Lmax ranges from 72 dBA to 90 dBA and SELs

[24] A "landing" includes two helicopter flight operations – an arrival and a departure.

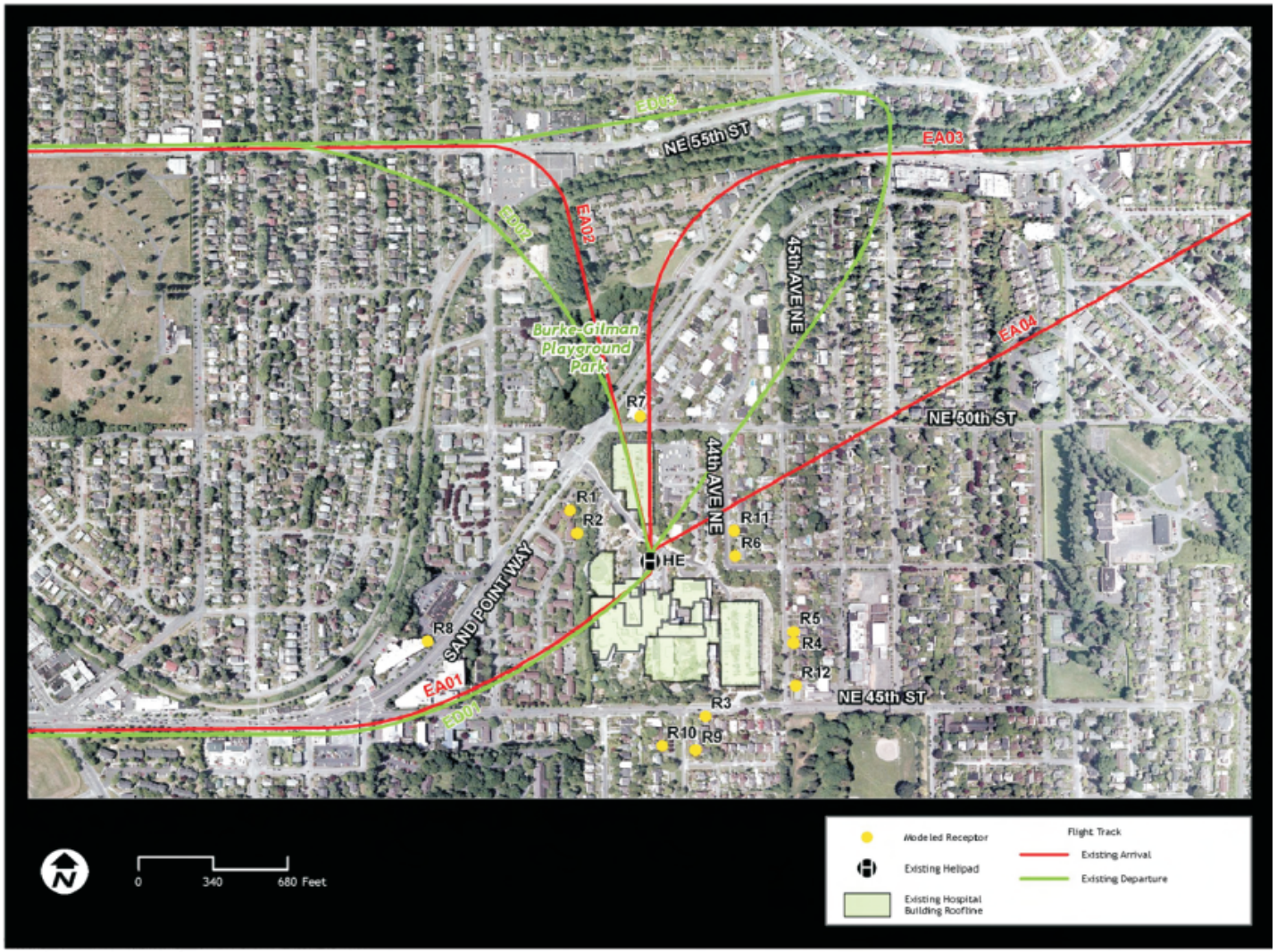
range from 89 dBA to 102 dBA. Receptor R7 at 4200 NE 50th Street experiences the highest DNLs (47 dBA for an average day and 63 dBA for a busy day) but Receptor R11 along 44th Avenue experiences the highest Lmax (90 dBA). As indicated by the rightmost column of Table 3.1-2, all of the maximum SELs are due to arrival flights. See Figure 3.1-1 for the modeled noise receptor locations and modeled flight paths for the existing helistop.

Table 3.1-2
Existing Modeled Noise Levels

Receptor		Noise Level (dBA)				Max SEL Track
ID	Address	AD[a] DNL	BD[b] DNL	Lmax	Max SEL	
R1	Laurelon Terrace, northernmost building	44	60	85	98	EA02
R2	Laurelon Terrace, south of R1	44	60	81	97	EA02
R3	4323 NE 45th St.	35	52	73	89	EA01
R4	4546 45th Ave. NE	38	54	73	92	EA04
R5	4554 45th Ave. NE	38	54	76	92	EA04
R6	4702 45th Ave. NE	45	61	89	101	EA04
R7	4200 NE 50th St.	47	63	89	102	EA03
R8	4545 Sand Point Way	41	57	87	98	EA01
R9	4412 43rd Ave. NE	35	52	75	90	EA01
R10	4415 43rd Ave. NE	36	52	77	91	EA01
R11	4720-4724 44th Ave. NE	46	62	90	101	EA04
R12	4530 45th Ave. NE	36	53	72	90	EA04

[a]AD = Average Day is 3 daytime landings and 1 nighttime landing per month
[b] BD = Busiest Day is 2 daytime landings and 2 nighttime landings per day
Daytime is from 7:00 am until 10:00 pm, nighttime is from 10:00 pm until 7:00 am.
All receptor elevations are assumed to be 5 ft above ground level.

DNL = Day-Night Average Sound Level
Lmax = Maximum Sound Level
SEL = Sound Exposure Level
dBA = A-weighted decibels re 20 µPa



Source: Wyle and CHRMC, 2007

Figure 3.1-1
Modeled Flight Tracks for Existing Helistop

Predicted Noise Levels for Alternative 7R

The helistop would remain in its existing location until the first phase of Alternative 7R is constructed on the existing Laurelon Terrace site. The first phase would include a new location for the Emergency Department. At that time the helistop would be relocated to the top of the new building placing it closer to Sand Point Way NE. At the time of preparing the Final EIS, there were two options being considered for the location of the Emergency Department. The helistop would be placed on the top of the building that is selected for the Emergency Department. One location analyzed for noise levels is depicted as Alternative 7RA Helistop Location, which would be located on the roof of the center building on the Laurelon Terrace site. The second location was called Alternative 7RB Helistop Location and would be located on the roof of the northernmost building on the Laurelon Terrace site. For the purpose of this Addendum, Alternative 7RA Helistop Location is the location most similar and closest to the proposed ground location.

Table 3.1-3 lists the noise exposure values for the modeled receptors for the Alternative 7RA helistop location (on top of the north building on the Laurelon Terrace site). Exposure calculations were not performed for receptors R1 and R2 because they would be on Children's property under Alternative 7R. Among the 10 analyzed receptors, DNLs would range from 37 dBA to 61 dBA, Lmax would range from 75 dBA to 87 dBA, and SELs would range from 89 dBA to 98 dBA. Receptor R7 would experience the highest DNLs (46 dBA for an average day and 61 dBA for a busy day) and the highest Lmax (87 dBA). As indicated by the "Max SEL Track" column, all of the maximum SELs would be due to arrival flights.

Table 3.1-3
Noise Exposure from Emergency Operations at Alternative 7RA Helistop Location

Receptor		Noise Level (dBA)				Max SEL Track	Change from Existing (dBA)			
ID	Address	AD† DNL	BD‡ DNL	Lmax	Max SEL		AD† DNL	BD‡ DNL	Lmax	Max SEL
R1	n/a***	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
R2	n/a***	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
R3	4323 NE 45th St.	36	52	75	89	A01	0	0	2	0
R4	4546 45th Ave. NE	38	53	77	90	A04	0	-1	4	-2
R5	4554 45th Ave. NE	38	53	77	91	A04	0	-1	1	-1
R6	4702 45th Ave. NE	42	57	84	96	A04	-3	-4	-5	-5
R7	4200 NE 50th St.	46	61	87	98	A03	-1	-2	-2	-4
R8	4545 Sand Point Way	42	58	86	97	A01	1	1	-1	-1
R9	4412 43rd Ave. NE	37	53	76	89	A01	2	1	1	-1
R10	4415 43rd Ave. NE	38	53	77	90	A01	2	1	0	-1
R11*	4720-4724 44th Ave. NE	43	58	86	97	A04	-3	-4	-4	-4
R12**	4530 45th Ave. NE	37	52	75	89	A04	1	-1	3	-1

* Receptor Location 1 from 1991 FEIS
** Receptor Location 2 from 1991 FEIS
[a]AD = Average Day is 3 daytime landings and 1 nighttime landing per month
[b] BD = Busiest Day is 2 daytime landings and 2 nighttime landings per day
Daytime is from 7:00 am until 10:00 pm, nighttime is from 10:00 pm until 7:00 am.
All receptor elevations are assumed to be 5 ft above ground level.

DNL = Day-Night Average Sound Level
Lmax = Maximum Sound Level
SEL = Sound Exposure Level
dBA = A-weighted decibels re 20 µPa

The increase in DNL or SEL relative to the existing condition would be 2 dB or less at all 10 receptors with many receptors experiencing a decrease. Due to the decreased building shielding, the increase in Lmax would be up to 4 dB at receptors R3 through R5, R9, and R12. Lmax would decrease by 1 to 5 dB at receptors R6 through R8, and R11. R10 would experience no measurable change in Lmax. Because the Alternative 7RA helistop was proposed to be approximately 40 feet higher than the existing pad, aircraft that overfly receptors would do so at a higher altitude, decreasing their noise exposure. In addition, the westward shift of the helistop would have shifted the flight tracks farther away from R6, R7, and R11. If the helistop location were not moved (and no construction occurred), DNL would increase by 1 dB solely due to the increase in average daily flight operations relative to the existing conditions.

EIS Addendum Information

Children's is proposing to relocate the existing helistop to a ground location north of the Phase 1 Development Project in an area that was to contain surface parking. As described by Children's, the ground location is to be considered a temporary location, lasting until they proceed with the next phase of development for the Diagnostics and Therapeutic (D&T) Building. No date has been established as to when that development may occur, but is anticipated to be at least seven years if not longer into the future. At that time, Children's has stated that they will include in their application for the D&T Building, a request for City approval to move the helistop from the ground location (Ground Location 1) to a temporary location on top of the Phase 1 Development building (Interim Location 2), and then to a permanent location on top of the D&T building (Future Location 3). Future Location 3 would be at approximately 40 feet to the east of the ground location and on top of the D&T building. See Figures 2-2 or 3.1-2 for the three locations.

For this Addendum, two additional receptors, designated R13 at the NE Corner of the Talaris Conference Center and R14 at 40th Ave NE and Terrace Dr NE, were identified and included in the noise analysis. Two of the original locations, Rl and R2 on Laurelon Terrace which were from the 1991 FEIS, would no longer be applicable because receptors R1 and R2 would be contained within the CHRMC property.

Consistent with the noise analysis performed for the EIS, the emergency flight operations at Children's were analyzed for Busiest Day DNL and Average Daily DNL. The population of the area served by Children's is projected to increase over the course of the helistop relocation (CHRMC, 2007), so the flight operations in the Average Day scenario for each of the helistop locations were adjusted to model the operational tempo expected when each helistop is planned to be in use. Busiest Day operations were based on 4 arrivals per day for all scenarios. Children's does not expect an increase in busy day flight tempo relative to the existing condition. Average Daily DNL was based on historical traffic for the existing condition and projected traffic conditions for proposed scenarios as follows:

- 60 arrivals per year for the existing helistop
- 77 arrivals for Alternatives 7RA
- 77 arrivals for the proposed Ground Location 1, Interim Location 2 on top of the Phase 1 Building, and Future Location 3

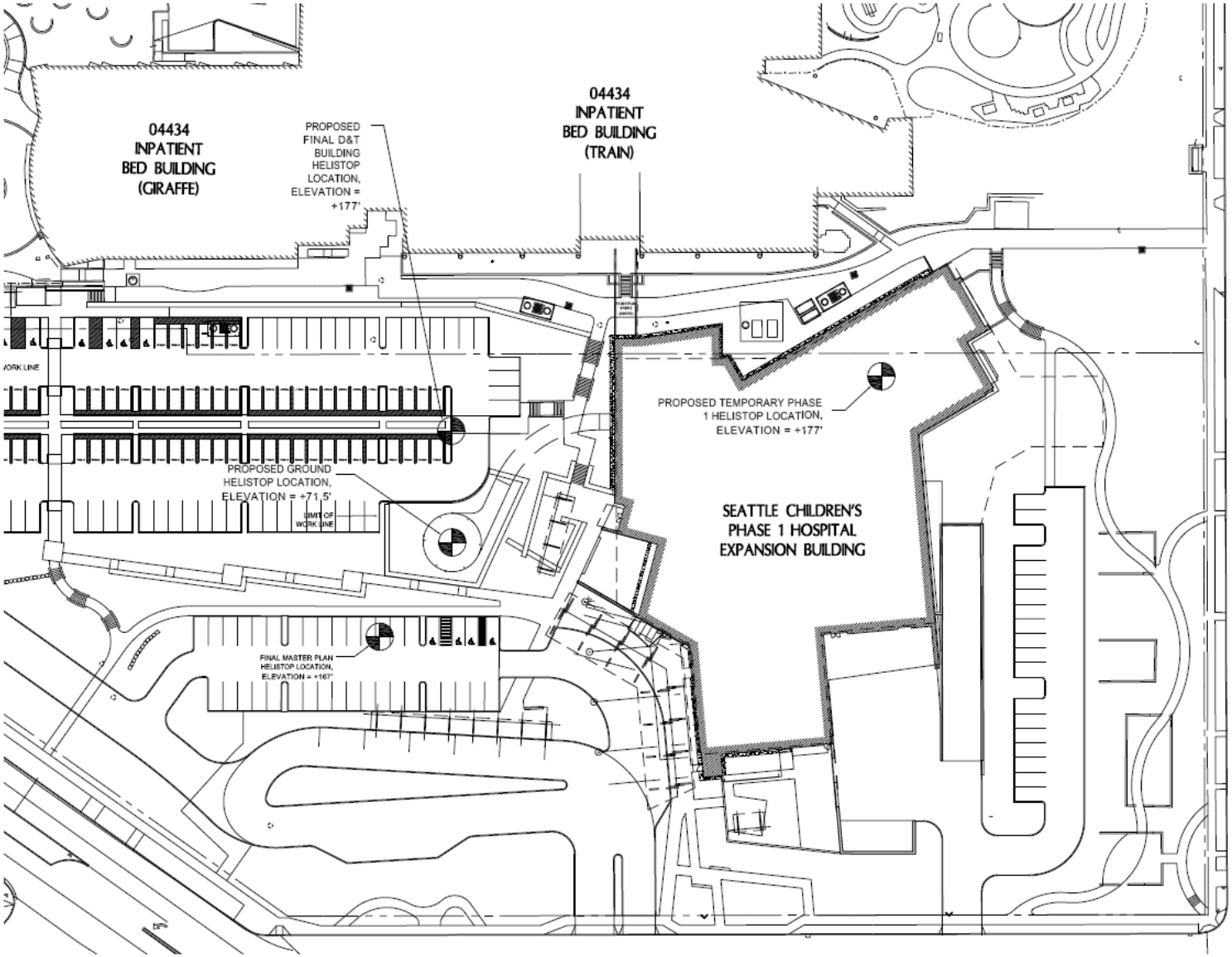


Figure 3.1-2
Proposed and Future Helistop Locations

The prior noise study was analyzed with 62 annual arrivals assuming an earlier year of implementation. The timeline used for this analysis is closer to the final build-out. Therefore, 77 annual arrivals are projected for the Alternative 7RA location, and for the Ground Location 1, Interim Location 2, and Future Location 3.

Existing Flight Operations

The existing condition was originally analyzed for receptors R1 through R12. This scenario is reanalyzed here to include the two recently identified receptors R13 and R14.

All Children's emergency flight operations were modeled with the Agusta A109 helicopter. The A109 is considered a light high-speed twin-engine four-bladed general purpose helicopter with a length of approximately 43 feet (ft), a main rotor diameter of approximately 36 ft and a maximum takeoff weight of approximately 5,400 pounds. Its maximum cruising speed is 165 miles per hour with a maximum climb rate of 1,620 ft per minute (Gunston, 1980).

Flight operations at Children's are relative to the nature of emergency treatment in the region and are unpredictable. Typically, Children's has experienced three daytime (7 am – 10 pm) arrivals and one nighttime (10 pm – 7am) arrival per month, on average. However, emergency flights on a given day have been as frequent as two during the daytime hours and two during the nighttime period.

Table 3.1-4 shows the two operational scenarios modeled for the existing helistop location. The Average Day scenario is based on historical Children's emergency landing counts from 2002 through 2006 (CHRMC, 2007). During that period, there were an average of 60 arrivals to Children's per year, with 75 percent occurring during the daytime period and 25 percent occurring during the nighttime period. Average daily flight operations are computed assigning a departure operation and an arrival operation to each sortie (1 sortie = 1 departure + 1 arrival) and dividing by 365. The Busiest Day scenario is based on 4 arrivals per day, with half occurring during the nighttime (10:00 pm to 7:00 am) period.

Table 3.1-4
Helicopter Flight Operations Modeled for Existing Helistop

Scenario	Number of Sorties	Operation Type	Daily Flight Operations		
			Day	Night	Total
Average Day	60/year	Departure	0.1233	0.0411	0.1644
		Arrival	0.1233	0.0411	0.1644
		Total	**0.2466**	**0.0822**	**0.3288**
Busiest Day	4/day	Departure	2	2	4
		Arrival	2	2	4
		Total	**4**	**4**	**8**

Notes: Day = 7:00 am - 10:00 pm; night = 10:00 pm - 7:00 am.
One sortie is equal to two operations - one departure and one arrival.

Table 3.1-5 lists the noise exposure values at the 14 modeled receptors for existing helistop location. Among the 14 receptors, Day-Night Average Sound Levels (DNL) for the Busiest Day would range from 52 A-weighted decibels (dBA) to 63 dBA, Maximum Sound Levels (L_{max}) would range from 72 dBA to 90 dBA, and the maximum Sound Exposure Levels (SEL) would range from 89 dBA to 102 dBA. Receptor R7 would experience the highest DNL (47 dBA for an

Average Day and 63 dBA for the Busiest Day). Receptor R11 would experience the highest L_{max} of 90 dBA. Receptor R7 would experience the highest SEL of 102 dBA. As indicated by the "Max SEL Track" column of Table 2-3, all of the maximum SEL events are due to arrival flights because the SEL of the Agusta A109 helicopter is up to 4 dBA greater for approach power than departure power.

Table 3.1-5
Noise Exposure from Emergency Operations at Existing Helistop

Receptor		Noise Level (dBA)				Max SEL
ID	Address	AAD† DNL	BD‡ DNL	L_{max}	Max SEL	Track
R1*	Laurelon Terrace, northernmost building	44	60	85	98	A06A02
R2**	Laurelon Terrace, south of R1	44	60	81	97	A06A02
R3	4323 NE 45th St.	36	52	73	89	A06A01
R4	4546 45th Ave. NE	38	54	73	92	A06A04
R5	4554 45th Ave. NE	38	54	76	92	A06A04
R6	4702 45th Ave. NE	45	61	89	101	A06A04
R7	4200 NE 50th St.	47	63	89	102	A06A03
R8	4545 Sand Point Way	41	57	87	98	A06A01
R9	4412 43rd Ave. NE	35	52	75	90	A06A01
R10	4415 43rd Ave. NE	36	52	77	91	A06A01
R11	4720-4724 44th St. NE	46	62	90	101	A06A04
R12	4530 45th St. NE	36	53	72	90	A06A04
R13	Talaris NE Corner	40	56	84	96	A06A01
R14	40th Ave NE/Terrace Dr NE	41	57	80	94	A06A01

Notes:
* Receptor Location 1 in 1991 FEIS
** Receptor Location 2 in 1991 FEIS
† AAD = Annual Average Day is 60 flights per year, 75% during daytime, 25% during nighttime
‡ BD = Busiest Day is 2 daytime flights and 2 nighttime flights per day
Day = 7:00 am - 10:00 pm; night = 10:00 pm - 7:00 am.
All receptor elevations are assumed to be 5 ft above ground level.

Alternative 7RA Helistop Location

Alternative 7RA was originally analyzed in the EIS for receptors R3 through R12. These scenarios are reanalyzed here to include receptors R13 and R14.

Table 3.1-6 shows the two operational scenarios modeled for Alternative 7RA. The Average Day scenario is based on a projected increase to 77 emergency arrivals per year relative to the existing condition as mentioned in the introduction, with 25 percent occurring during the nighttime period consistent with the previous analysis and the three locations analyzed in this Addendum. As with the existing helistop, the Busiest Day scenario is based on 4 arrivals per day, with half occurring during the nighttime (10:00 pm to 7:00 am) period.

Table 3.1-6
Emergency Flight Operations Modeled for Alternative 7RA Helistop Location

Scenario	Number of Sorties	Operation Type	Daily Flight Operations		
			Day	Night	Total
Average Day	77/year	Departure	0.1582	0.0527	0.2109
		Arrival	0.1582	0.0527	0.2109
		Total	**0.3164**	**0.1054**	**0.4218**
Busiest Day	4/day	Departure	2	2	4
		Arrival	2	2	4
		Total	**4**	**4**	**8**

Notes: Day = 7:00 am - 10:00 pm; night = 10:00 pm - 7:00 am.
One sortie is equal to two operations - one departure and one arrival.

Table 3.1-7 lists the noise exposure values at the modeled receptors for the Alternative 7RA helistop location. Among the 12 applicable receptors, Busiest Day DNLs would range from 52 dBA to 61 dBA, L_{max} would range from 75 dBA to 87 dBA, and SELs would range from 89 dBA to 98 dBA. For operations at the Alternative 7RA helistop location, receptor R7 would experience the highest DNL (46 dBA for an average day and 61 dBA for the busiest day). Receptor R7 would also experience the highest L_{max} and maximum SEL of 87 dBA and 98 dBA respectively. All of the maximum SEL events would be due to arrival flights of the same reason provided above.

Table 3.1-7
Noise Exposure from Helicopter Operations at Alternative 7RA Helistop Location

Receptor		Noise Level (dBA)				Max SEL Track	Change from Existing (dBA)			
ID	Address	AAD† DNL	BD‡ DNL	L_{max}	Max SEL		AAD† DNL	BD‡ DNL	L_{max}	Max SEL
R3	4323 NE 45th St.	36	52	75	89	A7RA-A01	0	0	2	0
R4	4546 45th Ave. NE	38	53	77	90	A7RA-A04	0	-1	**4**	-2
R5	4554 45th Ave. NE	38	53	77	91	A7RA-A04	0	-1	1	-1
R6	4702 45th Ave. NE	42	57	84	96	A7RA-A04	-3	-4	-5	-5
R7	4200 NE 50th St.	46	61	87	98	A7RA-A03	-1	-2	-2	-4
R8	4545 Sand Point Way	42	58	86	97	A7RA-A01	1	1	-1	-1
R9	4412 43rd Ave. NE	37	53	76	89	A7RA-A01	2	1	1	-1
R10	4415 43rd Ave. NE	38	53	77	90	A7RA-A01	2	1	0	-1
R11	4720-4724 44th St. NE	43	58	86	97	A7RA-A04	-3	-4	-4	-4
R12	4530 45th St. NE	37	52	75	89	A7RA-A04	1	-1	**3**	-1
R13	Talaris NE Corner	41	56	86	97	A7RA-A01	1	0	2	1
R14	40th Ave NE/Terrace Dr NE	45	60	86	97	A7RA-A03	**4**	**3**	**6**	**3**

Notes:
† AAD = Annual Average Day is 77 flights per year, 75% during daytime, 25% during nighttime
‡ BD = Busiest Day is 2 daytime flights and 2 nighttime flights per day
Day = 7:00 am - 10:00 pm; night = 10:00 pm - 7:00 am.
All receptor elevations are assumed to be 5 ft above ground level.

For the Alternative 7RA helistop location, the maximum increase in Busiest Day DNL relative to the existing condition would be 3 dBA or less at 4 of the 12 receptors and decrease up to 4 dBA at 6 receptors. The maximum increase in SEL relative to the existing condition would be 3 dBA or less at 2 of the 12 applicable receptors and decrease up to 5 dBA at 9 receptors. The maximum increase in DNL and SEL would be 3 dBA for receptor R14. For the Alternative 7RA location, L_{max} would increase by 6 dBA at receptor 14 and decrease by 5 dBA at receptor R6.

The Alternative 7RA location would be closer to the western edge of the Children's property than the existing location, so aircraft would be earlier in their initial ascent and therefore at a lower altitude when flying past receptors to the west of the hospital. The aircraft would also be a shorter horizontal distance to receptors such as R13 and R14. If the helistop location was not moved (and no construction occurred), Average Day DNL would increase by approximately 1 dBA, solely due to the increase in average daily flight operations relative to the existing condition for all proposed conditions.

Proposed Ground Location (Ground Location 1)

Figure 3.1-3 shows the position of Ground Location 1 relative to the surrounding community and its typical flight tracks. Ground Location 1 would be on ground level just north of the Phase 1 buildings in the western expansion at approximately 46 feet to the south and 58 feet' to the east of the Compiled Master Plan Alternative 7RA helistop location and at an elevation of 71.5 ft MSL. The tracks would be similar to the flight tracks for the existing condition. The primary difference in the Ground Location 1 flight tracks is that arrivals and departures would follow one of two corridors. The corridor to the north of the helistop would extend approximately 400 feet north of the helistop and all flights would travel at least this length prior to initiating the first turn. There would be a similar corridor to the west southwest.

Departure and arrival flight profiles were transferred from the existing flight tracks to the flight tracks for the Ground Location 1, and adjusted to accommodate the new helistop height while using the same cruise altitude. Helicopter arrivals are modeled with the same parameters for cruise altitude except descending to an altitude of approximately 550 ft MSL at 0.5 nm from the pad. A linear descent would continue to the helistop.

Table 3.1-8 lists the noise exposure values at the modeled receptors for the proposed Ground Location 1. Among the 12 applicable receptors, Busiest Day DNLs would range from 50 dBA to 61 dBA, Lmax would range from 67 dBA to 92 dBA, and maximum SELs would range from 88 dBA to 101 dBA. For operations, receptors R7 and R8 would experience the highest DNL (46 dBA for an average day and 61 dBA for the busiest day). Receptor R8 would experience the highest Lmax of 92 dBA and receptor R8 would experience the highest SEL of 101 dBA. As indicated by the "Max SEL Track" column of Table 3.1-6, all of the maximum SEL events would be due to arrival flights because the Agusta A109 helicopter is up to 4 dBA louder on approach power than departure power.

For the proposed Ground Location 1, the maximum increase in Busiest Day DNL relative to the existing condition would be 4 dBA or less at 2 of the 12 receptors and decrease up to 4 dBA at 10 receptors. The maximum increase in SEL relative to the existing condition would be 7 dBA or less at 2 of the 12 receptors and decrease up to 9 dBA at 8 receptors. The maximum increase in Busiest Day DNL and maximum SEL would be 4 dBA and 4 dBA respectively for receptor R14. Lmax would increase by 7 dBA at receptor 14 and decrease by 9 dBA at receptor R13.

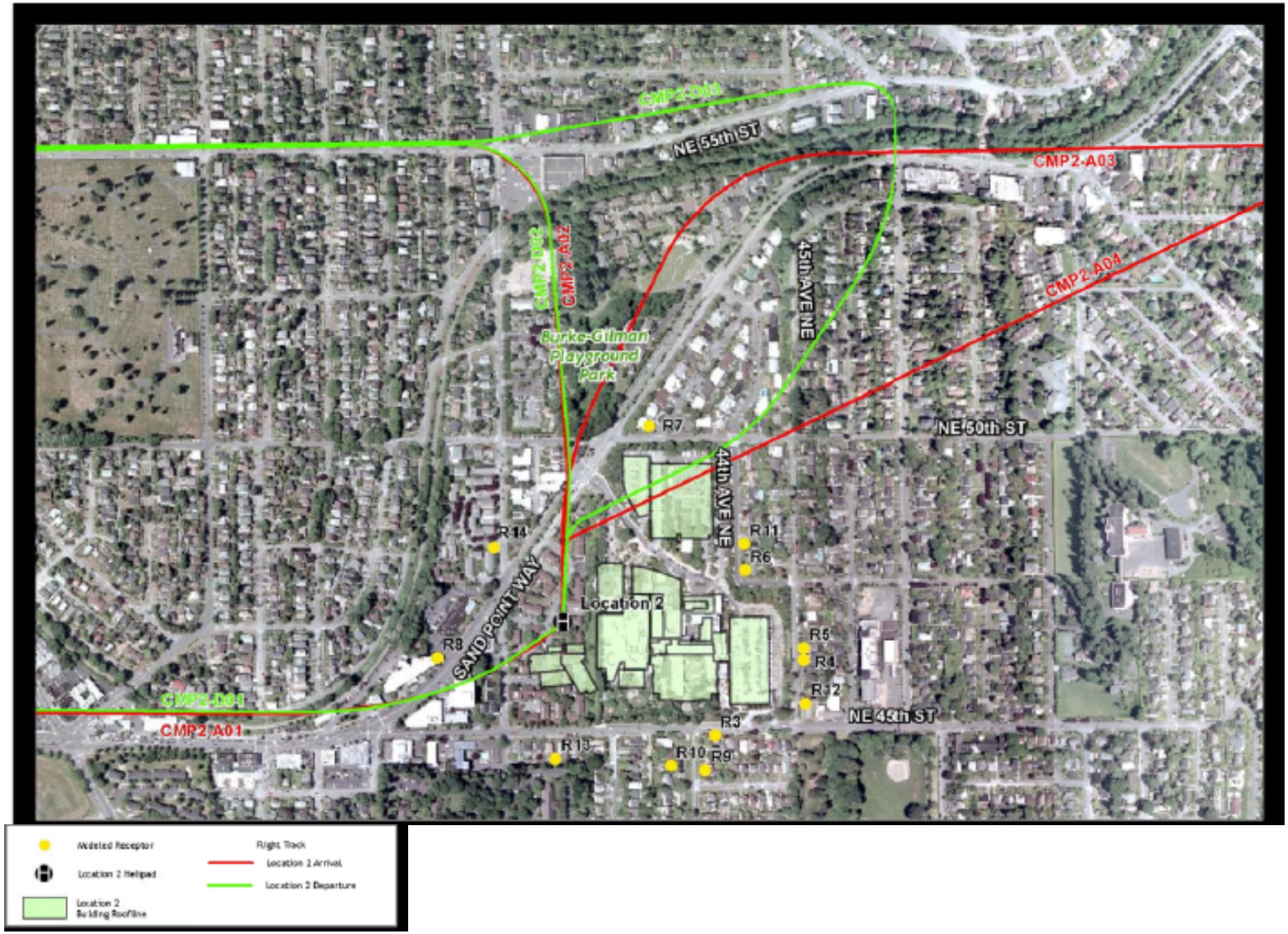


Figure 3.1-3
Ground Location 1 Typical Flight Tracks

Table 3.1-8
Noise Exposure from Helicopter Operations at Ground Location 1

Receptor		Noise Level (dBA)				Max SEL Track	Change from Existing (dBA)			
ID	Address	AAD† DNL	BD‡ DNL	Lmax	Max SEL		AAD† DNL	BD‡ DNL	Lmax	Max SEL
R1	Laurelon Terrace, northernmost building	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
R2	Laurelon Terrace, south of R1	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
R3	4323 NE 45th St.	35	50	67	88	CMP2A04	-1	-2	-6	-1
R4	4546 45th Ave. NE	37	52	72	90	CMP2A04	-1	-2	-1	-2
R5	4554 45th Ave. NE	37	52	74	91	CMP2A04	-1	-2	-2	-1
R6	4702 45th Ave. NE	42	57	84	96	CMP2A04	-3	-4	-5	-5
R7	4200 NE 50th St.	46	61	85	99	CMP2A03	-1	-2	-4	-3
R8	4545 Sand Point Way	46	61	92	101	CMP2A01	**5**	**4**	**5**	**3**
R9	4412 43rd Ave. NE	35	50	68	87	CMP2A04	0	-2	-7	-3
R10	4415 43rd Ave. NE	36	51	69	88	CMP2A01	0	-1	-8	-3
R11	4720-4724 44th St. NE	43	58	86	97	CMP2A04	-3	-4	-4	-4
R12	4530 45th St. NE	36	51	70	89	CMP2A04	0	-2	-2	-1
R13	Talaris NE Corner	38	53	75	93	CMP2A01	-2	-3	-9	-3
R14	40th Ave NE/Terrace Dr NE	46	61	87	98	CMP2A02	**5**	**4**	**7**	**4**

Notes:
† AAD = Annual Average Day is 77 flights per year, 75% during daytime, 25% during nighttime
‡ BD = Busiest Day is 2 daytime flights and 2 nighttime flights per day
Day = 7:00 am - 10:00 pm; night = 10:00 pm - 7:00 am.
All receptors are assumed to be 5 ft above ground level.

Comparison of Predicted Noise Levels Between Alternative 7RA and Ground Location 1

Table 3.1-9 provides a comparison of the L_{max} noise levels for the existing helistop location, noise levels predicted for the Alternative 7RA Location, and noise levels predicted for the Ground Location 1. A table comparing each of the four noise parameters is included in Appendix A.

Table 3.1-9
Comparison of Noise Levels for Existing, Alternative 7R and Ground Location 1

	Receptor	L_{max}			
ID	**Address**	**Existing**	**7R**	**Ground**	**Change Between 7R and Ground**
R1	Laurelon Terrace, northernmost building	85	NA	NA	NA
R2	Laurelon Terrace, south of R1	81	NA	NA	NA
R3	4323 NE 45th St.	73	75	67	-8
R4	4546 45th Ave. NE	73	77	72	-5
R5	4554 45th Ave. NE	76	77	74	-3
R6	4702 45th Ave. NE	89	84	84	0
R7	4200 NE 50th St.	89	87	85	-2
R8	**4545 Sand Point Way**	**87**	**86**	**92**	**6**
R9	4412 43rd Ave. NE	75	76	68	-8
R10	4415 43rd Ave. NE	77	77	69	-8
R11	4720-4724 44th St. NE	90	86	86	0
R12	4530 45th St. NE	72	75	70	-5
R13	Talaris NE Corner	84	86	75	-11
R14	**40th Ave NE/Terrace Dr NE**	**80**	**86**	**87**	**1**

In comparing the proposed Ground Location 1 with the impacts identified for the Alternative 7RA helistop location, Lmax would increase by 6 dBA at receptor R8 and 1 dBA at receptor R14, remain the same at two receptor locations (R6 and R11), and decrease from 2 to 11 dBAs at remaining locations.

Future Helistop Relocations

As part of the analysis and separate MUP application prepared for the future D&T building, Children's will propose a permanent location for the helistop. Children's has stated that they will include in their D&T Building MUP application, a request for City approval to move the helistop from the ground location (Ground Location 1) to a temporary location on top of the Phase 1 Development building (Interim Location 2), and then to a permanent location on top of the D&T building (Future Location 3). Future Location 3 would be at approximately 40 feet to the east of the ground location and on top of the D&T building. See Figure 3.1-2 for the three locations.

Because background noise levels and exact locations may change, it is anticipated that a new noise analysis similar to that performed for this Addendum would be performed for the future MUP. Based on the information known today, a noise analysis has been prepared for each of the two future locations (Interim Location 2 and Future Location 3) in order to compare the potential impacts of future conditions. Again, this information is preliminary, and will be either re-verified or reanalyzed at the time Children's proposes a MUP for the future D&T building.

Interim Location 2

Interim Location 2 would be on top of the Phase 1 Development Project at an elevation of 176 ft MSL. See Figure 3.1-2. Interim Location 2 is proposed to be used during the construction of the future D&T build out. The tracks would be similar to the flight tracks for the existing condition. The primary difference in the Interim Location s flight tracks is that arrivals and departures would follow one of two corridors. The corridor to the north of the pad would extend approximately 500 feet north of the pad and all flights would travel at least this length prior to initiating the first turn. There would be a similar corridor to the west southwest. Departure and arrival flight profiles were transferred from the existing flight tracks and adjusted to accommodate the new helistop height while using the same cruise altitude. Helicopter arrivals are modeled with the same parameters for cruise altitude except descending to an altitude of approximately 650 ft MSL at 0.5 nautical miles (nm) from the pad. A linear descent would continue to the helistop.

The Busiest Day scenario is a worst-case scenario, and the operations used for the all interim Locations Busiest Day DNL would be the same as for the existing helistop.

Table 3.1-10 lists the noise exposure values at the modeled receptors for Interim Location 2. Among the 12 applicable receptors, Busiest Day DNLs would range from 53 dBA to 60 dBA, L_{max} would range from 75 dBA to 87 dBA, and maximum SELs would range from 90 dBA to 98 dBA. Receptors R7 and R14 would experience the highest DNL (45 dBA for an average day and 60 dBA for the busiest day). Receptors R7 and R8 would experience the highest L_{max} and maximum SEL of 87 dBA and 98 dBA respectively. Maximum SEL events would be due to arrival flights because the Agusta A109 helicopter has greater SEL values for approach power than departure power.

For Interim Location 2, the maximum increase in Busiest Day DNL relative to the existing condition would be 5 dBA or less at 6 of the 12 receptors and decrease up to 4 dBA at 3 receptors. The maximum increase in SEL relative to the existing condition would be 2 dBA or less at 2 of the 12 receptors and decrease up to 5 dBA at 7 receptors. The maximum increase in Busiest Day DNL and SEL would be 3 dBA and 5 dBA respectively for receptor R14. L_{max} would increase by 5 dBA at receptor 14 and decrease by 6 dBA at receptor R6.

Table 3.1-10
Noise Exposure from Emergency Operations at Interim Location 2

Receptor		Noise Level (dBA)				Max SEL Track	Change from Existing (dBA)			
ID	Address	AAD† DNL	BD‡ DNL	Lmax	Max SEL		AAD† DNL	BD‡ DNL	Lmax	Max SEL
R1	Laurelon Terrace, northernmost building	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
R2	Laurelon Terrace, south of R1	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
R3	4323 NE 45th St.	39	54	75	91	CMP1-A04	**3**	2	2	2
R4	4546 45th Ave. NE	39	54	77	91	CMP1-A04	1	0	**4**	-1
R5	4554 45th Ave. NE	39	54	78	91	CMP1-A04	1	0	2	-1
R6	4702 45th Ave. NE	42	57	83	96	CMP1-A04	-3	-4	-6	-5
R7	4200 NE 50th St.	45	60	87	98	CMP1-A03	-2	-3	-2	-4
R8	4545 Sand Point Way	44	59	87	98	CMP1-A01	**3**	2	0	0
R9	4412 43rd Ave. NE	38	53	76	88	CMP1-A01	**3**	1	1	-2
R10	4415 43rd Ave. NE	39	54	77	90	CMP1-A01	**3**	2	0	-1
R11	4720-4724 44th St. NE	43	58	85	97	CMP1-A04	-3	-4	-5	-4
R12	4530 45th St. NE	38	53	76	90	CMP1-A04	2	0	**4**	0
R13	Talaris NE Corner	41	57	85	96	CMP1-A01	1	1	1	0
R14	40th Ave NE/Terrace Dr NE	45	60	85	96	CMP1-A02	**4**	**3**	**5**	2

Notes:
† AAD = Annual Average Day is 77 flights per year, 75% during daytime, 25% during nighttime
‡ BD = Busiest Day is 2 daytime flights and 2 nighttime flights per day
Day = 7:00 am - 10:00 pm; night = 10:00 pm - 7:00 am.
All receptors are assumed to be 5 ft above ground level.

Future Location 3

Future Location 3 would be on top of the future D&T building in the western expansion at an elevation of 176 ft MSL. The location is approximately 40 feet east of the Ground Location 1, and located on top of the building. The primary difference in the Future Location 3 flight tracks is that arrivals and departures would follow one of two corridors. The corridor to the north of the helistop would extend approximately 400 feet north of the helistop and all flights would travel at least this length prior to initiating the first turn. There would be a similar corridor to the west southwest. Departure and arrival flight profiles were transferred from the existing flight tracks to the flight tracks for the Future Location 3 helistop, and adjusted to accommodate the new helistop height while using the same cruise altitude. Helicopter arrivals are modeled with the same parameters for cruise altitude except descending to an altitude of approximately 650 ft MSL at 0.5 nm from the helistop. A linear descent would continue to the helistop.

Table 3.1-11 lists the noise exposure values at the modeled receptors for Future Location 3. Among the 12 applicable receptors, Busiest Day DNLs would range from 51 dBA to 61 dBA, L_{max} would range from 73 dBA to 90 dBA, and maximum SELs would range from 88 dBA to 100 dBA. Receptor R7 would experience the highest DNL (46 dBA for an average day and 61 dBA for the busiest day). Receptor R8 would also experience the highest L_{max} and SEL of 90 dBA and 100 dBA respectively. As indicated by the “Max SEL Track” column of Table 3.1-11, all of the maximum SEL events would be due to arrival flights because the Agusta A109 helicopter is up to 4 dBA louder on approach power than departure power.

For Future Location 3, the maximum increase in Busiest Day DNL relative to the existing condition would be 3 dBA or less at 3 of the 12 receptors and decrease up to 4 dBA at 8 receptors. The maximum increase in SEL relative to the existing condition would be 2 dBA or less at 2 of the 12 receptors and decrease up to 6 dBA at 10 receptors. The maximum increase in Busiest Day DNL and maximum SEL would be 3 dBA for receptors R8 and R14. L_{max} would increase by up to 4 dBA at receptor 4 and decrease by 6 dBA at receptor R6.

Table 3.1-11
Noise Exposure from Emergency Operations at Helistop Future Location 3

Receptor		Noise Level (dBA)				Max SEL Track	Change from Existing (dBA)			
ID	Address	AAD† DNL	BD‡ DNL	Lmax	Max SEL		AAD† DNL	BD‡ DNL	Lmax	Max SEL
R1	Laurelon Terrace, northernmost building	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
R2	Laurelon Terrace, south of R1	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
R3	4323 NE 45th St.	36	51	73	88	CMP3_A04	0	-1	0	-1
R4	4546 45th Ave. NE	38	53	77	91	CMP3_A04	0	-1	**4**	-1
R5	4554 45th Ave. NE	38	53	77	91	CMP3_A04	0	-1	1	-1
R6	4702 45th Ave. NE	42	57	83	95	CMP3_A04	-3	-4	-6	-6
R7	4200 NE 50th St.	46	61	86	98	CMP3_A03	-1	-2	-3	-4
R8	4545 Sand Point Way	45	60	90	100	CMP3_A01	**4**	**3**	**3**	2
R9	4412 43rd Ave. NE	37	52	74	88	CMP3_A04	2	0	-1	-2
R10	4415 43rd Ave. NE	38	53	75	89	CMP3_A04	2	1	-2	-2
R11	4720-4724 44th St. NE	43	58	85	97	CMP3_A04	-3	-4	-5	-4
R12	4530 45th St. NE	37	52	75	89	CMP3_A04	1	-1	**3**	-1
R13	Talaris NE Corner	38	53	81	94	CMP3_A01	-2	-3	-3	-2
R14	40th Ave NE/Terrace Dr NE	45	60	83	96	CMP3_A02	**4**	**3**	**3**	2

Notes:
† AAD = Annual Average Day is 77 flights per year, 75% during daytime, 25% during nighttime
‡ BD = Busiest Day is 2 daytime flights and 2 nighttime flights per day
Day = 7:00 am - 10:00 pm; night = 10:00 pm - 7:00 am.
All receptors are assumed to be 5 ft above ground level.

Future Location 3 would be farther west than the existing helistop location, so aircraft would be earlier in their initial ascent and at a lower altitude when flying past receptors to the west and to the south of the hospital. The aircraft would also be a shorter horizontal distance to receptors such as R14 relative to the existing condition.

Comparison of Predicted Noise Levels Between Alternative 7RA, Ground Location 1, Interim Location 2, and Future Location 3

Table 3.1-12 provides a comparison of the predicted L_{max} noise levels for the Alternative 7RA location, and noise levels predicted for the Ground Location 1, Interim Location 2, and Future Location 3. A table comparing each of the four noise parameters is included in Appendix A.

Table 3.1-12
Comparison of Noise Levels for Alternative 7RA, Ground Location 1, Interim Location 2, and Future Location 3

	Receptor	L_{max}					
ID	**Address**	**Alternative 7RA**	**Ground Location 1**	**Interim Location 2**	**Future Location 3**	**Change Between Ground and Location 3**	**Change Between Alternative 7RA and Location 3**
R1	Laurelon Terrace, northernmost building	NA	NA	NA	NA	NA	NA
R2	Laurelon Terrace, south of R1	NA	NA	NA	NA	NA	NA
R3	**4323 NE 45th St.**	75	67	75	73	**6**	-2
R4	**4546 45th Ave. NE**	77	72	77	77	**5**	0
R5	**4554 45th Ave. NE**	77	74	78	77	**3**	0
R6	4702 45th Ave. NE	84	84	83	83	-1	-1
R7	**4200 NE 50th St.**	87	85	87	86	**1**	-1
R8	4545 Sand Point Way	86	92	87	90	-2	**4**
R9	**4412 43rd Ave. NE**	76	68	76	74	**6**	-2
R10	**4415 43rd Ave. NE**	77	69	77	75	**6**	-2
R11	4720-4724 44th St. NE	86	86	85	85	-1	-1
R12	**4530 45th St. NE**	75	70	76	75	**5**	0
R13	**Talaris NE Corner**	86	75	85	81	**6**	-5
R14	40th Ave NE/Terrace Dr NE	86	87	85	83	-4	-3

Due to the shielding effects of the Phase 1 Building, L_{max} noise levels from the Ground Location 1 will be less than those predicted for the Alternative 7RA location analyzed in the EIS. Assuming Interim Locations 2 and Future Location 3 are located where they are currently anticipated, noise levels will increase from the conditions predicted for the Ground Location 1 at eight of the receptor locations (R3, R4, R5, R7, R9, R10, R12, and R13), and decrease at four receptor locations (R6, R8, R11, and R14). In comparing the predicted noise levels for Future Location 3 with those estimated for Alternative 7RA in the EIS, noise levels will be the same at three locations (R4, R5, and R12), less at eight locations (R3, R6, R7, R8, R9, R10, R11, and R13), and greater at one location (R8).

Mitigation

Helicopter flights are only used when the time saved in transporting an ill child would make a critical difference in the child's care and recovery. Mitigation measures were established in Seattle City Council's conditional use permit for the existing helistop.

Significant Unavoidable Adverse Impacts

No significant unavoidable adverse environmental health-related impacts are anticipated.

Secondary and Cumulative Impacts

No new secondary and cumulative noise impacts have been identified.

3.2 LIGHT AND GLARE

See Section 3.4 Plants for a discussion of plants and landscaping, potential impacts and proposed mitigation.

Impacts Previously Disclosed in the EIS and in the Phase 1 Addendum

Impacts Disclosed in the EIS

Each alternative would likely generate typical stationary sources of light including interior lighting, pedestrian level lighting (along proposed sidewalks, entryways) and illuminated signs. Specific information relative to stationary building fixtures and signage would be provided as part of the construction-level plans associated with the Building Permit process. At times during the construction period, required area lighting of the job site would be provided, and lighting would be directed away from residences as much as possible.

Factors that contribute to glare off of buildings include weather, time of day and year, objects that block a light source or reflected light, the reflectivity of materials, and façade orientation. Glare is greatest on clear days during the spring, fall and winter months when the sun's altitude is low on the horizon or below about 30 degrees. This is when incoming rays reflect off windows and surfaces that carry for long distances. In Seattle, the number of clear days with sufficient sunlight to cast shadows and glare average about nine days during the winter months, 16 days during the spring months, and 29 days during summer months, and 17 days during the fall months.

Light and glare from the alternatives is not expected to cause safety hazards. The buffer would continue to block adjacent areas from light and glare. More specific glare analysis will be conducted further into the design process.

Impacts Disclosed in the Phase 1 Addendum

Typical stationary sources of light that could expect to be generated by the proposed Phase 1 would include interior lighting, pedestrian level lighting (along proposed sidewalks, entryways) and illuminated signs. Mobile sources of light include light from vehicle headlights. Specific information relative to stationary building fixtures and signage would be provided as part of the

construction-level plans associated with the Building Permit process. At times during the construction period, required area lighting of the job site would be provided.

Light and glare from the completed Phase 1 is not expected to cause safety hazards nor significantly affect surrounding land uses. The new emergency department entrance would be from 40th Avenue NE that will have a drive up feature where a car will drive under an awning or overhang. The new entrance will direct light downward. The interior of the Phase 1 development will be lit as needed to fulfill clinical functions.

EIS Addendum Information

As described in the MUP application for Phase 1, exterior lighting will be designed to maintain safety and security on the site while minimizing light trespass. Lighting will be designed to reduce the development impact on the nighttime environment of the neighborhood in accordance with SMC 23.45.570 I and Section IV.D.13 of the MIMP. This will be accomplished by:

- Implementing a lighting system with minimum foot-candle levels but high uniformity of lighting levels in pedestrian and vehicle areas.
- Reducing glare by using shielded full cut-off luminaries and directing illumination away from adjacent properties.
- Reducing sky-lighting by eliminating the use of up-lighting between the hours of 11:00 PM and 5:00 AM.
- In accordance with the street vacation public benefit features, enhanced pedestrian safety and vehicular lighting design will use the Crime Prevention Through Environmental Design (CPTED) Strategies.

Lighting at the helistop would consist of:

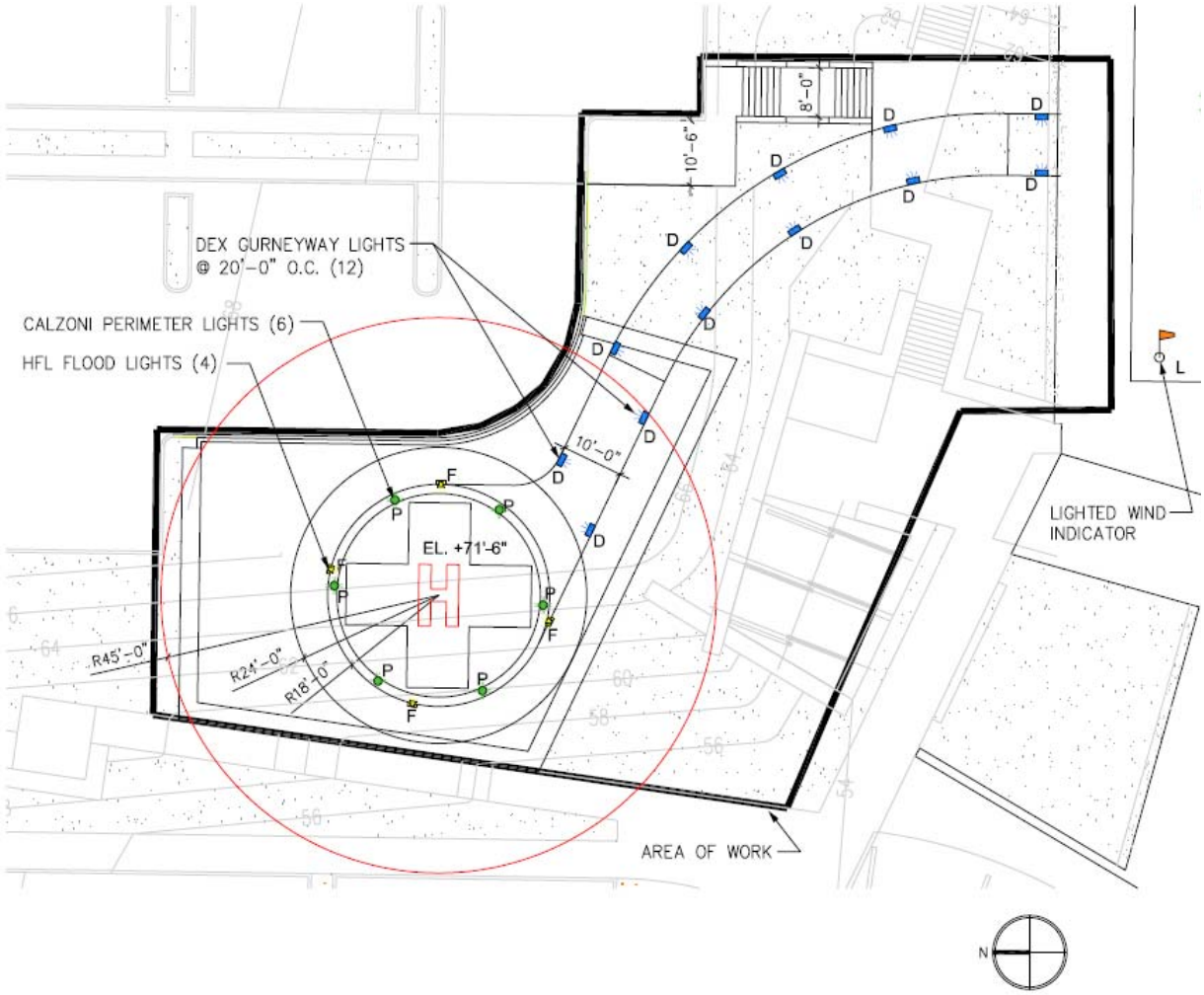
- Eight (8), LED perimeter imbedded in the landing area (12.5 watt)
- Four (4) flood (75-watt) attached to the vertical edge of the landing area
- Obstruction lights (LED 57-watt) - locations to be determined
- A lighted wind indicator (150-watt) - location to be determined.

Lighting locations are depicted in Figures 3.2-1 and 3.2-2.

There would be no uplighting at the helistop. All lights are chosen and positioned to minimize glare and to be the lowest wattage possible. This minimal lighting strategy is used to maintain pilots' night vision. However, this strategy also helps minimize impacts to surrounding uses.

Lighting would be turned on when the hospital is notified of a pending transfer. The lights would remain on until the helicopter has departed.

The helistop will be connected to the new Emergency Department via a 10-foot wide paved pathway that will transition to a pedestrian bridge to connect directly to Level A of the building. The doorway from the building to the pedestrian bridge would be secured and used only for transporting patients from the helistop. The pathway would be lit only during times of patient transport.



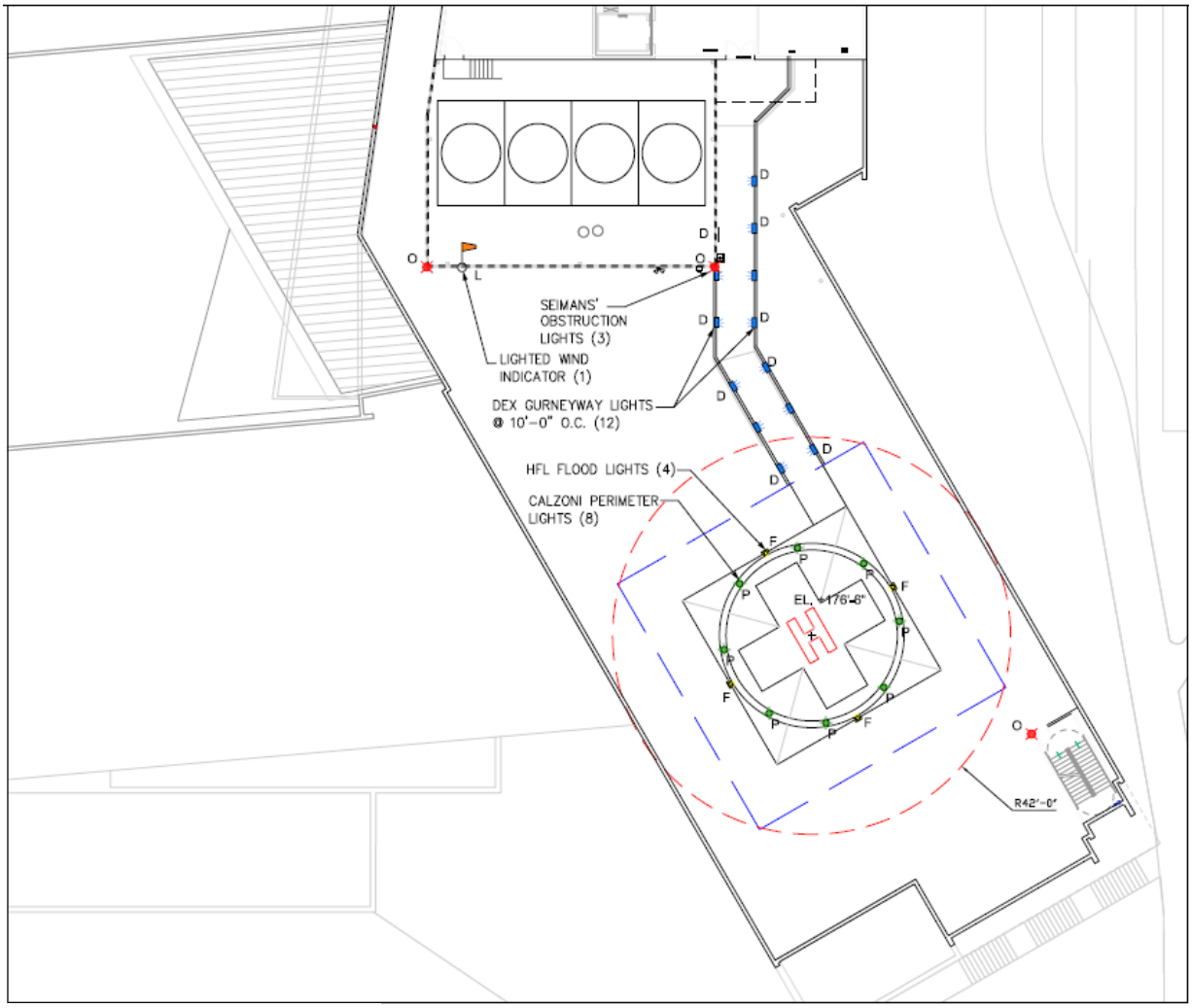
LEGEND

- Calzoni perimeter lights (P)
- HFL flood lights (F)
- Dex gurneyway lights (D)
- Hali-brite lighted wind indicator (L)
- Siemen's obstruction lights (O)
  (no obstruction lights this drawing)

Light locations shown are estimated. Minor adjustments to locations may occur during final design.

Source: Siemens

Figure 3.2-1
Grade Level Helistop Light Array



LEGEND

- Calzoni perimeter lights (P)
- HFL flood lights (F)
- Dex gurneyway lights (D)
- Hali-brite lighted wind indicator (L)
- Siemen's obstruction lights (O)

Light locations shown are estimated. Minor adjustments to locations may occur during final design.

Source: Siemens

Figure 3.2-2
Phase 1 Helistop Light Array

Mitigation

As described above, the lighting design will include a number of features that will minimize light and glare impacts. These features include:

- Reducing glare by using shielded full cut-off luminaries and directing illumination away from adjacent properties.
- Reducing sky-lighting by eliminating the use of up-lighting between the hours of 11:00 PM and 5:00 AM.
- No uplighting at the helistop.
- Lighting would be turned on when the hospital is notified of a pending transfer. The lights would remain on until the helicopter has departed.
- The helistop will be connected to the new Emergency Department via a 10-foot wide paved pathway. The pathway would be lit only during times of patient transport.

All lights are chosen and positioned to minimize glare and to be the lowest wattage possible. This minimal lighting strategy is used to maintain pilots' night vision. However, this strategy also helps minimize impacts to surrounding uses.

No additional mitigation measures are required.

Significant Unavoidable Adverse Impacts

With the implementation of the proposed design measures, no significant unavoidable adverse light or glare impacts are anticipated.

Secondary and Cumulative Impacts

There is a potential for an overall increase of lighting and glare in the area.

3.3 TRANSPORTATION/PARKING

Construction

Impacts Previously Disclosed in the EIS and Phase 1 Development Addendum

Table 3.4-1 provides a summary of the FEIS Phase 1 anticipated truck traffic. Potential construction impacts identified in the EIS included:

- Arrival, departure, and parking of construction worker vehicles or shuttles
- Delivery of construction materials
- Removal of debris associated with demolition activity
- Delivery of construction vehicles and machinery
- Delivery or removal of material associated with fill or excavation activity
- Potential conflicts with bicyclists and pedestrians

Table 3.4-1
Construction Truck Traffic

FEIS Phase 1 (Alternative 7R)			Proposed Phase 1		
Duration (months)	**Trucks per Day[1]**	**Trucks per Hour[2]**	**Duration (months)**	**Trucks per Day[1,3]**	**Trucks per Hour[2]**
5	36	6	1.5	31	5

Source: Transpo Group, March 2008 and May 2010.
1. The calculation of trucks per day assumes trucks hold 20 cubic yards and there are 20 working days per month.
2. The calculation of trucks per hour assumes there are six-hours per day where deliveries are allowed.
3. The trucks per day accounts for six deliveries per day.

Construction impacts for the proposed Phase 1 would be related to truck traffic associated with hauling demolition and excavation materials off-site as well as importing fill material on-site. Demolition, excavation, and importing of fill are not anticipated to occur at the same time. Importing fill is anticipated to generate the most truck traffic since it would occur over a shorter period of time and be a larger quantity than the demolition and excavation. The amount of fill imported would be approximately 15,250 cubic yards, and the duration is approximately 6 weeks (1.5 months). In addition to the trucks hauling fill, there would be approximately 4 to 6 deliveries per day. Table 3.4-1 summarizes estimated truck traffic per day and per hour for Phase 1. A comparison is provided to FEIS Phase 1 Alternative 7R as this most closely aligns with the current proposal. The calculation of daily truck traffic assumes 20 working days per month and six-hours per day when deliveries to and from the site would be allowed. It is assumed that truck traffic would be prohibited from entering and exiting the site during the morning and evening peak hours.

As shown in Table 3.4-1, daily truck traffic for the proposed Phase 1 would be approximately 31 trucks per day, which is slightly less than projected in the EIS. Assuming truck deliveries occur over a six-hour period, this equates to an average of approximately 5 trucks per hour. Each truck would have an inbound and an outbound trip, which results in 10 total truck trips per hour. Examining a one hour time period shows that with an average of 10 total truck trips per hour, there would be approximately one truck every six minutes.

Consistent with the EIS, the remaining traffic generated by construction would be by construction workers. The maximum number of construction workers on-site is anticipated to be approximately 250 workers. Assuming average vehicle occupancy of approximately 1.1 passengers per vehicle, 250 workers would generate approximately 230 vehicle trips. Construction parking would be provided at off-site parking areas supported by shuttle service to and from the campus. Therefore, no parking impacts are expected during construction of the proposed Phase 1.

EIS Addendum Information

Construction of the helistop will require 800 cubic yards of cut and 1200 cubic yards of fill. Depending on the suitability of the existing material for use for foundations, a portion, or all, of the fill may come from other areas of the Children's campus. For the purpose of analyzing potential maximum truck traffic, we have assumed that all excavated material would need to be transported off site, and all fill material would need to be imported. With each truck capable of holding 20 cubic yards, 40 truck trips would be required for removing excavated materials, and 60 truck trips would be required for importing fill material. The same trucks would be used for

moving soil offsite and bringing new soil onsite. In other words, one truck would come to the site carrying new material, dump the material in a stockpile area, be filled with material to be moved offsite, and then drive off site to dump the unusable material and be filled with new material. This would result in a maximum of 60 truck trips at an average of 5 to 6 per day. If all of the material needed to be transported offsite and all new material needed to be imported, construction traffic could occur for up to two weeks.

Transportation Concurrency

The relocation of the helistop will not have an affect on transportation concurrency.

Street System

The relocation of the helistop will not have an affect on the operation of the street system or improvements planned to the street frontages approved as part of the *Phase 1 Development*. Site access will remain the same as approved for the *Phase 1 Development*.

Traffic Volumes

The relocation of the helistop will not have an affect on roadway traffic volumes.

Trip Generation

The relocation of the helistop will not have an affect on roadway trip generation.

Traffic Assignment

The relocation of the helistop will not have an affect on roadway traffic assignment.

Corridor Operations

The relocation of the helistop will not have an affect on roadway corridor operations. The flight paths will continue to follow main arterials as they do under existing conditions.

Access Operations

Impacts Previously Disclosed in the EIS and in the Phase 1 Development Addendum

As described previously, the FEIS Phase 1 for Alternative 7R most closely represents the proposed Phase 1 traffic. Access for Phase 1 of Alternative 7R was proposed via two driveways along 40th Avenue NE. Analysis disclosed in the EIS showed that good access operations were anticipated with completion (full build out) of Alternative 7R; therefore it was anticipated that access operations with the lower traffic volumes for the FEIS Phase 1 would also be good.

The Phase 1 traffic would access the expanded campus via 40th Avenue NE and Penny Drive. Signalization of the Sand Point Way NE/40th Avenue NE intersection is required prior to occupancy of the proposed Phase 1 based on the Master Plan conditions of approval. Table 3.10-6 in the *Phase 1 Development* Addendum provides a summary of the site access evaluation for the No Build and proposed Phase 1 conditions. As shown in the table, all

intersections would operate at LOS C or better, which indicates good operations and is consistent with the findings in the FEIS.

A new vehicle access connection was approved as part of the Phase 1 MUP between the Phase 1 parking areas and the upper campus, via the Giraffe entrance driveway. The internal connection would increase site access flexibility in the event that drivers inadvertently enter the site from the wrong access point and need to drive across campus to reach the proper parking area. The internal access would eliminate or minimize the need for those drivers to go back out onto area roadways to reach their desired parking or drop-off/pick-up location. Use of this internal connection would minimize the impacts to the adjacent street system, while adding to site access convenience.

This connection would also result in an increase in the number of vehicle drivers wanting to use the Giraffe entrance intersection with Penny Drive to park in the new surface lot on the north side of the Phase 1 building. A review of the year 2015 with Phase 1 traffic queues was conducted to determine if queues on Penny Drive would block this entrance and whether improvements would be necessary. Queues exceeding 85 feet would block the Giraffe entrance. During the PM peak hour, an average vehicle queue of approximately 55 feet is anticipated with a 95th percentile peak queuing condition (or queue that could be exceeded 5 percent of the time) of approximately 170 feet. When the driveway is being blocked, it would result in added delay and inconvenience to inpatient visitors, especially those exiting the driveway. This could result in some increased use of the 40th Avenue NE access for exiting the inpatient parking. Overall, the amount of additional use is anticipated to be low, and would be unlikely to result in a new adverse effect. Phase 1 is anticipated to result in approximately 40 new trips exiting the Giraffe entrance during the PM peak hour. Even if all of these trips shifted to 40th Avenue NE, the Sand Point Way NE/40th Avenue NE and NE 45th Street/40th Avenue NE intersections, along with the 40th Avenue NE access, would continue to operate at LOS B or better.

EIS Addendum Information

Relocation of the helistop to the ground location north of the Phase 1 building will not affect the site access or the internal connection described above. The location of the relocated helistop would require the elimination of 11 of the planned 201 new surface parking spaces. If the surface parking lot is heavily used, the reduction of 11 spaces could have the effect of increasing the number of drivers who use the internal connection to drive to one of the parking garages after finding the surface lot full. The surface lot will contain 190 spaces, so the potential number of additional internal campus trips is anticipated to be low.

Parking

Impacts Previously Disclosed in the EIS and Phase 1 Development Addendum

The EIS noted that parking at each phase should be provided to adequately serve Children's parking demand. The FEIS Phase 1 for all four alternatives (Alternatives 3, 6, 7R and 8) showed that peak parking demand would be approximately 2,300 to 2,500 vehicles with proposed parking supplies between 2,260 and 2,710 spaces. Imbalances between parking supply and demand were noted as potential impacts depending on actual achieved mode splits and actual number of spaces constructed.

Children's currently provides a total of 2,202 spaces through a combination of 1,462 on-site spaces and 740 leased off-site spaces. As part of the Phase 1 development, Children's planned to construct approximately 201 spaces on the existing Laurelon Terrace site to serve the additional inpatient beds and emergency department. There would be approximately 148 spaces for inpatients, 35 spaces for the emergency department, and 18 spaces for the staff/service vehicles. This would have increased the total parking supply on campus to 1,663 spaces. If Children's were to continue leasing 740 off-site spaces, the total parking supply would be 2,403 spaces.

Peak parking demand was calculated for the proposed Phase 1 based on the EIS methodology with refinements based on building uses similar to the trip generation estimates. Table 3.4-2 shows the estimated peak parking demand for Phase 1. For context, the parking demand for Phase 1 of Alternative 7R is shown. The parking demand for FEIS Phase 1 has been updated using the methodology developed for the approved Phase 1 to provide two points of comparison.

Table 3.4-2
Unmitigated Parking Demand and Supply

	FEIS Phase 1 (Alternative 7R)[1]		**Approved Phase 1**
	FEIS Method	**Refined Method**	
Parking Demand[2]	2,300 vehicles	2,500 vehicles	2,200 vehicles
On Campus Parking Supply	1,762 spaces	1,762 spaces	1,663 spaces
Off-site Leased Parking Supply	580 spaces	740 spaces	740 spaces
Total Parking Supply	2,342 spaces	2,502 spaces	2,403 spaces
Surplus	42 spaces	2 spaces	203 spaces

Source: Transpo Group, May 2010
1. FEIS Phase 1 trip generation is shown based on the FEIS trip generation methodology and the refined methodology developed for the Phase 1 analysis.
2. Effective parking demand is based on the methodology developed as part of the *Seattle Children's Final Environmental Impact Statement* (FEIS), November 10, 2008 and allows for a cushion to accommodate circulation and minor fluctuation in demand.

As shown in the table, the approved Phase 1 would result in a total peak parking demand of approximately 2,200 spaces which would still exceed the on-site supply of 1,663 spaces, requiring Children's to continue leasing spaces off-site. If Children's were to continue leasing 740 spaces, the combined parking supply of 2,403 spaces would fully accommodate the approved Phase 1 parking demand. The parking demand for the approved Phase 1 is less than the FEIS Phase 1 and may allow Children's to reduce the number of spaces it leases off-site.

EIS Addendum Information

Relocation of the helistop to the ground location north of the Phase 1 building would require the elimination of 11 of the planned 201 new surface parking spaces. The total peak parking demand estimated for the approved Phase 1 would remain the same at approximately 2,200 spaces. The parking demand would exceed the on-site supply of 1,652 spaces, requiring Children's to continue leasing spaces off-site. If Children's were to continue leasing 740 spaces, the combined parking supply of 2,392 spaces would fully accommodate the approved Phase 1 parking demand. As shown in Table 3.4-3, there would be a parking space surplus of

192 spaces. The parking demand for the approved Phase 1 of 2,200 spaces may allow Children's to reduce the number of spaces it leases off-site.

Table 3.4-3
Unmitigated Parking Demand and Supply

	Approved Phase 1	Results of Relocating Helistop to Ground Location
Parking Demand[1]	2,200 vehicles	2,200 vehicles
On Campus Parking Supply	1,663 spaces	1,652 spaces
Off-site Leased Parking Supply	740 spaces	740 spaces
Total Parking Supply	2,403 spaces	2,392 spaces
Surplus	203 spaces	192 spaces

Source: Transpo Group, May 2010
1. Effective parking demand is based on the methodology developed as part of the *Seattle Children's Final Environmental Impact Statement* (FEIS), November 10, 2008 and allows for a cushion to accommodate circulation and minor fluctuation in demand.

Transit and Shuttle

During use of the helistop, vehicular and pedestrian traffic would be stopped at the entrances for up to one hour while the helicopter is on the ground. This could delay pedestrians reaching the transit and shuttles, or delay shuttle access to the campus.

Helistop

Impacts Previously Disclosed in the EIS

On average, Children's experiences three to four daytime landings and one to two nighttime landings per month. For the last five years, the average has been 60 landings per year. Using a standard population/use rate methodology to project future helicopter air ambulance patient landings at Children's, the projected landings per year are 62 by 2010, 71 by 2020, and 77 by 2030.

EIS Addendum Information

Children's has provided a 4 year comparison for fiscal years 2006 – 2009 of the modes of critical care transport to Seattle Children's. Landings directly at Children's are limited to critically ill and/or unstable patients for whom immediate pediatric care or intervention is indicated.

The data compare the number of helistop landings at Children's with the numbers of planes landing at Boeing Field and the University of Washington Intramural Field. Landings at Boeing Field and the Intramural Field require a ground transport to Children's. The data include a total for the numbers of ground transports which includes transport of critical patients from the remote landing sites, and other transport of critical patients,

Table 3.4-4
Four Year Comparison: Total Critical Care Transport to Seattle Children's

	FY 2006[1]	FY 2007[1]	FY 2008[1]	FY 2009[1]
SCH Landings	59	40	44	69
Intramural Field Landings	138	112	116	133
Boeing Field Landings	147	181	161	199
Ground Transport	325	330	404	386
Total[2]	669	663	725	787

[1] Fiscal Year runs from October 1 to September 30
[2] Source: Seattle Children's Hospital 2010

Helistop Landings

Data from 2009 confirmed the previous years' averages of three to four daytime landings and one to two nighttime landings per month. The total landings for 2009 were 60[25], as compared to the average of 51 landings per year for years 2005 – 2009. For years 2000 – 2009, the average number of landings per year was 54. The annual numbers ranged from lows of 36 landings in 2000 and 35 landings in 2007 to highs of 71 landings in 2002 and 68 landings in 2004.

Data for the first six months of 2010 (January to June) showed a total of 25 landings, with an average of two daytime landings and two to three nighttime landings (between 7 pm and 6 am). For the six month period, 13 landings occurred during nighttime hours. Two months (January and May) had a total of 6 landings in each month, and on two days (January 28 and May 12), there were two landings. April had the fewest number of landings, with two landings, one of which was during the nighttime hours.

Future projections of landings are expected to be the same as or less than disclosed in the EIS (62 by 2010, 71 by 2020, and 77 by 2030). Relocating the helistop is not anticipated to have an affect on the number or timing of helistop landings at Children's.

Landings at the University of Washington Intramural Field

For the years 2000 – 2009, there was an average of 142 landings per year at the University of Washington Intramural Field, with 136 landings occurring in 2009. Landings during the last three years (2007 – 2009) have averaged 124 landings per year.

For the first six months of 2010 (January – June), there have been 55 landings at the Intramural Field.

Projected landings at the Intramural Field are expected to remain similar to the average of the last ten years.

[25] This number varies from the number shown for FY 2009 in Table 3.4-4, as it is based on the calendar year of January 1 to December 31, and the data in Table 3.4-4 is based on a fiscal year of October 1 to September 30.

Mitigation

The Seattle City Council, in Ordinance No. 123263 dated April 5, 2010, imposed conditions as part of its approval of the Children's MIMP, however none of those conditions relate directly to the helistop location or its operation. No additional mitigation measures are required for the relocation of the helistop.

Significant Unavoidable Adverse Impacts

No significant adverse impacts have been identified that were not previously disclosed as part of the FEIS for the Seattle Children's MIMP.

Secondary and Cumulative Impacts

No significant off-site or on-site operation impacts are expected from the relocation of the helistop. As with the construction of Phase 1, there is a potential for cumulative impacts due to traffic being generated by the construction of the relocated helistop with other area projects. This potential impact would be mitigated by scheduling construction activities such that arrival and departure of construction traffic occurs outside the peak hours.

3.4 PLANTS

Impacts Previously Disclosed in EIS and Phase 1 Development Addendum

A discussion of plants was included in the EIS in Section 3.9 Aesthetics/Light, Glare and Shadows. Specifically the discussion of impacts to plants is found in Section 3.9.2.1 Aesthetics. The following information on impacts previously disclosed in the EIS comes from that section of the EIS.

Alternative 7R would result in the need to remove, relocate and/or replant trees that exist on the Laurelon Terrace site. Children's is regionally known for its rich horticultural diversity and commitment to the landscape. Children's goal is to preserve as much of the existing plant material (trees and shrubs) as possible. To the extent possible, this preservation would be accomplished by transplanting existing trees and shrubs to temporary locations during construction for re-introduction on site, transplanting existing trees and shrubs to permanent locations on site that are not affected by the construction process, and introducing new plants and trees of appropriate species and size to meet the goals of the project and the requirements of the City of Seattle Landscape Codes (Directors Rules 13-92, 6-2001, 10-2006, and related SMC sections) unless modified by the Master Plan. It is Children's goal that the landscape would fit within the context of the rest of the campus and become a public benefit for the employees, patients, and surrounding neighborhood. Table 3.5-1 describes the various impacts and proposed improvements for the current landscaped buffer around the perimeter of the site.

Table 3.5-1
Proposed Landscaping Impacts and Proposed Improvements

Street Frontage	Alternative 7R – Expanded Boundary, Early Laurelon Development
40th Avenue NE	41st Avenue NE and NE 46th Street would be vacated between Sand Point Way NE and 40th Avenue NE, and street trees and plantings would be placed along the roadway

Street Frontage	Alternative 7R – Expanded Boundary, Early Laurelon Development
Laurelon Terrace Boundary	The MIO and development would include Laurelon Terrace
Sand Point Way NE	Existing plants in Laurelon Terrace would be removed and replaced consistent with plantings along an arterial roadway
NE 50th Street and NE 45th Street	The eastern two-thirds of the 20 foot buffer along NE 50th Street would be increased to 75 feet, and the western third would be increased to 40 feet. The existing 75 foot buffer along NE 45th Street would be maintained, and a 40-foot landscaped buffer proposed along NE 45th Street for the Laurelon Terrace site. Buffer may be enhanced with plants relocated from construction area.
44th Avenue NE	The existing 40-foot landscaped buffer would be increased to 75 feet.
NE 47th Street and 45th Avenue NE	The existing 75-foot buffer would be maintained and may be enhanced with plants relocated from construction area

Seattle's SEPA policies include a policy on the protection of plants and animals (SMC 25.05.675 N. Plants and Animals). This policy applies to the protection of wildlife habitat and other vegetation which have substantial aesthetic, educational, ecological, and/or economic value, with a high priority to be given to the preservation and protection of special habitat types. Special habitat types include, but are not limited to, wetlands and associated areas (such as upland nesting areas), and spawning, feeding, or nesting sites. A high priority shall also be given to meeting the needs of state and federal threatened, endangered, and sensitive species of both plants and animals.

Within the Children's campus, and more specifically within the area proposed for the development of Phase 1, there are no shorelines, wetlands and associated areas, or spawning or aquatic feeding sites. There are no state and federal threatened, endangered, and sensitive species of either plants or animals.

The site proposed for Phase 1 has extensive landscaping that provides habitat diversity for birds and small animals commonly found in Seattle's urban setting. One mitigation measure listed in the SEPA Policy on Plants and Animals is landscaping and/or the retention of existing vegetation.

In addition to the SEPA Policy on Plants and Animals, Seattle has enacted a Tree Protection Ordinance. Seattle's Tree Protection Ordinance, SMC 25.11, applies to trees outside of the footprint approved by the City Council for Alternative 7R. The Tree Protection Ordinance is intended to both protect exceptional trees[26], and to promote site planning and horticultural practices that are consistent with the reasonable use of property (SMC 25.11.010 D).

Children's has surveyed trees within the expanded campus area and has identified trees that would be potentially affected by Phase 1 development. There are 92 trees or shrubs outside of the approved boundary of Alternative 7R. Of these 92 trees or shrubs, one tree has been identified as "exceptional" due to its large size, and an additional 19 trees or shrubs have been identified as "exceptional" due to being located in a grove or group.

As required by SMC 25.11.050, Children's submitted with their MUP application for Phase 1 a tree protection report prepared by a tree care professional that provides:

26 As defined in SMC 25.11.020, "Exceptional tree" means a tree or group of trees that because of its unique historical, ecological, or aesthetic value constitutes an important community resource, and is deemed as such by the Director according to standards promulgated by the Department of Planning and Development.

- Tree evaluation with respect to its general health, damage, danger of falling, proximity to existing or proposed structures and or utility services
- Evaluation of the anticipated effects of proposed construction on the viability of the tree
- A hazardous tree assessment, if applicable
- Plans for supervising, and/or monitoring implementation of any required tree protection or replacement measures
- Plans for conducting post-construction site inspection and evaluation

Table 3.5-2 summarizes the total number of trees and shrubs evaluated, how many would be protected in place, relocated or removed, and of the total 92, how many of the trees or shrubs are considered exceptional either due to their size, or due to being located within a grove. The numbers have been revised from those shown in Table 3.12-2 in the Phase 1 Development Addendum. The revisions are based on determinations by the City of Seattle that 3 of the 4 trees previously identified as "exceptional single trees" do not meet the requirements for such designation as they are smaller than originally estimated. One shrub has been eliminated from the list of "exceptional trees or shrubs due to located within a grove" as it is not a City regulated shrub. The revised information is provided in Table 3.5-2.

Table 3.5-2
Revised Summary of Tree Protection and Removal

	#	Protected in Place	Relocated	Removed
Total Number of Trees and Shrubs	92	70	7	15
Exceptional Single Trees	1	1	0	0
Exceptional Trees or Shrubs Due to Located Within a Grove	19	19	0	0

Of the 92 trees or shrubs, 20 are considered "exceptional" due to either their size or location within a group or grove. All 20 are proposed to be protected in plan.

As described in the EIS, Children's goal is to preserve as much of the existing plant material (trees and shrubs) as possible. To the extent possible, Children's plans on transplanting existing trees and shrubs to temporary locations during construction for re-introduction on site, transplanting existing trees and shrubs to permanent locations on site that are not affected by the construction process, and introducing new plants and trees of appropriate species and size.

The landscaping proposed in the mitigation for the Phase 1 Development will compensate for the loss of existing vegetation and reduce the impacts of the loss of overall vegetation amounts to levels of less than significance.

EIS Addendum Information

Relocating the helistop to the north parking lot will require revisions to the landscaping that was proposed in the MUP application for the Phase 1 Development, however it will not affect any of

the 20 trees or shrubs that were found to be “exceptional”. Those 20 will continue to be protected in place.

The flight path to the ground level helistop will require trees that will not achieve tall mature heights. Plan sheet L1.00 in the MUP application for the helistop relocation provides a list of proposed plant materials and a revised landscaping plan. The list includes tree species that will be compatible with the flight path and still provide screening for the parking lot areas.

Mitigation

The mitigation proposed for the Phase 1 Development is adequate to compensate for the loss of existing vegetation on the western portion of the expanded campus. No additional impacts would result from the relocation of the helistop and no additional mitigation measures are needed.

Significant Unavoidable Adverse Impacts

No significant unavoidable adverse plant or animal impacts are anticipated as a result of relocating the helistop to the ground location.

Secondary and Cumulative Impacts

Children’s campus is located within a developed area of northeast Seattle. The landscaping and vegetation in the area provides a diverse habitat for birds and small animals commonly found in Seattle’s urban setting. The proposed landscaping for the site will maintain and contribute to the preservation of plant habitat. No secondary or cumulative impacts to plants or animals are anticipated.

Section 4 - References

Seattle City Council. 2010. Seattle Children's Hospital Major Institution Master Plan (MIMP) (Ordinance #123263). April 5.

Seattle Department of Planning and Development (Seattle DPD). 2008a. *Draft EIS – Seattle Children's Hospital Major Institution Master Plan*. June 8.

———. 2008b. *Final EIS – Seattle Children's Hospital Major Institution Master Plan*. November 10.

———. 2009. *Revised Final EIS – Seattle Children's Hospital Major Institution Master Plan*. May 28.

———. 2010. EIS Addendum for the Proposed Phase 1 Hospital Expansion Project – *Seattle Children's Hospital Major Institution Master Plan*. August 12.

Seattle Department of Design, Construction and Land Use (Seattle DCLU). 1992. *Draft Environmental Impact Statement for Children's Hospital & Medical Center*. October 15, 1992.

———. 1993. *Final Environmental Impact Statement for Children's Hospital & Medical Center*. June 1993.

Seattle Department of Design, Construction and Land Use (Seattle DCLU). 1996. *Addendum to: EIS for Children's Hospital & Medical Center, Major Institution Master Plan -- A & B-Wing Bed Renovations*. May 10. DCLU MUP Project # 9602453.

———. 2001. EIS Addendum for the Proposed Parking Garage -- *Children's Hospital & Regional Medical Center*. January 25.

———. 2002. EIS Addendum for the Proposed Inpatient Wing -- Children's Hospital & Regional Medical Center. March 21.

———. 2003a. EIS Addendum for the Emergency Department/Operating Room -- Children's Hospital & Regional Medical Center. January 30.

———. 2003b. EIS Addendum for the Ambulatory Care Building -- Children's Hospital & Regional Medical Center. June 9.

Section 5 - Glossary

Ambulatory care. Any medical care delivered on an outpatient basis.

A-weight. A standard frequency weighting to stimulate the response of the human ear.

Cumulative effect. The effects on the environment that result from the incremental consequences of an action when added to other past, present and reasonably foreseeable future actions.

Elevation. Measurement from sea level; for this project, often at the face of a building.

Environmental impact statement (EIS). A document that identifies and analyzes, in detail, environmental impacts of a proposed action. As a tool for decision-making, the EIS describes positive and negative effects, and lists alternatives for an undertaking.

Grade. The natural surface contour of a lot. Grade can be modified by minor adjustments to the surface of the lot in preparation for construction.

Height. Measurement from grade.

Major Institution. An institution providing medical or educational services to the community. A Major Institution, by nature of its function and size, dominates and has the potential to change the character of the surrounding area and/or create significant negative impacts on the area. To qualify as a Major Institution, an institution must have a minimum site size of sixty thousand (60,000) square feet of which fifty thousand (50,000) square feet must be contiguous, and have a minimum gross floor area of three hundred thousand (300,000) square feet. The institution may be located in a single building or a group of buildings which includes facilities to conduct classes or related activities needed for the operation of the institution.

A Major Institution shall be determined to be either an educational Major Institution or a medical Major Institution, according to the following: (1) "Educational Major Institution" means an accredited post-secondary level educational institution, operated by a public agency or nonprofit organization, granting associate, baccalaureate and/or graduate degrees. The institution may also carry out research and other activities related to its educational programs. (2) "Medical Major Institution" means a licensed hospital.

Major Institution Overlay (MIO). According to the Seattle Municipal Code, an MIO District shall overlay existing zoning to regulate appropriate institutional growth within the boundaries.

Medical Major Institution. A licensed hospital.

Medical service. A retail sales and service use in which health care for humans is provided on an outpatient basis, including but not limited to offices for doctors, dentists, chiropractors, and other health care practitioners. Permitted accessory uses include associated office, research and laboratory uses.

Mitigation measures. Actions taken to reduce adverse effects on the environment, usually implemented under the State Environmental Policy Act.

MUP. Master Use Permit. The document issued to a project applicant, recording all land use decisions made by the DPD on a master use application. The term excludes construction permits and land use approvals granted by the City Council, by citizen boards or by the state.

State Environmental Policy Act (SEPA). State legislation passed in 1974, which establishes an environmental review process for all development projects and major planning studies prior to taking any action on these projects. SEPA permits early coordination to identify and mitigate any significant issues or impacts that may result from a project or study.

Section 6 - Distribution List

Federal Agencies:	Environmental Protection Agency, Region X Department of Housing and Urban Development, Region X Centers for Medicare and Medicaid Services, Region X U.S. Department of Transportation, Federal Aviation Administration
State of Washington:	Governor of the State of Washington Department of Commerce Department of Ecology Department of Health Department of Transportation Office of Archaeology & Historic Preservation
Regional Agencies:	King County Metro, Environmental Planning Puget Sound Clean Air Agency Puget Sound Regional Council
City of Seattle:	Office of the Mayor Department of Planning and Development Department of Neighborhoods Department of Parks and Recreation Fire Department Office of Economic Development Police Department Seattle City Light Seattle Design Commission Seattle-King County Department of Health Seattle Public Utilities Seattle Department of Transportation
Utility Companies:	Puget Sound Energy Seattle Steam Corporation
Libraries:	Seattle Public Library, Central and Northeast Branches
Newspapers:	Seattle Times Seattle Post Intelligencer Daily Journal of Commerce
Special Interest:	Children's Major Institution Master Plan Standing Advisory Committee
Groups:	Airlift Northwest Burke-Gilman PDA Board City-University Citizens Advisory Committee Greater University Chamber of Commerce Harborview Medical Center

Hawthorne Hills Community Club
King County Emergency Medical Services Advisory Committee
King County Medical Society
Laurelcrest Condominiums
Laurelhurst Community Club
Laurelhurst West Condominiums
League of Women Voters
Montlake Community Club
Ravenna-Bryant Community Association
Ravenna Springs Community Council
Sand Point Community Communication Committee
Seattle Children's Hospital
University District Community Council
University Neighborhood Service Center
University of Washington Facilities Management Office
University of Washington Medical Center
View Ridge Community Club
Washington State Hospital Association
Washington State Medical Association
Windermere Corporation
70th and Sand Point Way Advisory Committee

APPENDIX A
NOISE

Table 1: Comparison of Noise Levels for Existing, Alternative 7R, and Proposed Ground Location

Receptor		Noise Level (dBA)															
		AAD† DNL				BD‡ DNL				L_{max}				Max SEL			
ID	Address	Existing	7R	Ground	Change Between 7R and Ground	Existing	7R	Ground	Change Between 7R and Ground	Existing	7R	Ground	Change Between 7R and Ground	Existing	7R	Ground	Change Between 7R and Ground
R1	Laurelon Terrace, northernmost building	44	NA	NA	NA	60	NA	NA	NA	85	NA	NA	NA	98	NA	NA	NA
R2	Laurelon Terrace, south of R1	44	NA	NA	NA	60	NA	NA	NA	81	NA	NA	NA	97	NA	NA	NA
R3	4323 NE 45th St.	36	36	35	-1	52	52	50	-2	73	75	67	-8	89	89	88	-1
R4	4546 45th Ave. NE	38	38	37	-1	54	53	52	-1	73	77	72	-5	92	90	90	0
R5	4554 45th Ave. NE	38	38	37	-1	54	53	52	-1	76	77	74	-3	92	91	91	0
R6	4702 45th Ave. NE	45	42	42	0	61	57	57	0	89	84	84	0	101	96	96	0
R7	4200 NE 50th St.	47	46	46	0	63	61	61	0	89	87	85	-2	**102**	**98**	**99**	**1**
R8	**4545 Sand Point Way**	**41**	**42**	**46**	**4**	**57**	**58**	**61**	**3**	**87**	**86**	**92**	**6**	**98**	**97**	**101**	**4**
R9	4412 43rd Ave. NE	35	37	35	-2	52	53	50	-3	75	76	68	-8	90	89	87	-2
R10	4415 43rd Ave. NE	36	38	36	-2	52	53	51	-2	77	77	69	-8	91	90	88	-2
R11	4720-4724 44th St. NE	46	43	43	0	62	58	58	0	90	86	86	0	101	97	97	0
R12	4530 45th St. NE	36	37	36	-1	53	52	51	-1	72	75	70	-5	90	89	89	0
R13	Talaris NE Corner	40	41	38	-3	56	56	53	-3	84	86	75	-11	96	97	93	-4
R14	**40th Ave NE/Terrace Dr NE**	**41**	**45**	**46**	**1**	**57**	**60**	**61**	**1**	**80**	**86**	**87**	**1**	**94**	**97**	**98**	**1**

Notes:
Receptor Location 1 in 1991 FEIS
Receptor Location 2 in 1991 FEIS
† AAD = Annual Average Day is 60 flights per year, 75% during daytime, 25% during nighttime
‡ BD = Busiest Day is 2 daytime flights and 2 nighttime flights per day
Daytime is from 7:00 am until 10:00 pm, nighttime is from 10:00 pm until 7:00 am.
All receptors are assumed to be 5 ft above ground level.
DNL = Day-Night Average Sound Level; Lmax = Maximum Sound Level;
SEL = Sound Exposure Level; dBA = A-weighted decibels re 20 μPa

Table 2: Comparison of Future Noise Levels for Interim Ground Location, Interim Location 2, and Future Location 3

Receptor		Noise Level (dBA)															
		AAD† DNL				BD‡ DNL				L_{max}				Max SEL			
ID	Address	Ground	Interim Location 2	Future Location 3	Change Between Ground and Location 3	Ground	Interim Location 2	Future Location 3	Change Between Ground and Location 3	Ground	Interim Location 2	Future Location 3	Change Between Ground and Location 3	Ground	Interim Location 2	Future Location 3	Change Between Ground and Location 3
R1	Laurelon Terrace, northernmost building	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
R2	Laurelon Terrace, south of R1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
R3	**4323 NE 45th St.**	**35**	**39**	**36**	**1**	**50**	**54**	**51**	**1**	**67**	**75**	**73**	**6**	**88**	**91**	**88**	**0**
R4	**4546 45th Ave. NE**	**37**	**39**	**38**	**1**	**52**	**54**	**53**	**1**	**72**	**77**	**77**	**5**	**90**	**91**	**91**	**1**
R5	**4554 45th Ave. NE**	**37**	**39**	**38**	**1**	**52**	**54**	**53**	**1**	**74**	**78**	**77**	**3**	**91**	**91**	**91**	**0**
R6	4702 45th Ave. NE	42	42	42	0	57	57	57	0	84	83	83	-1	96	96	95	-1
R7	4200 NE 50th St.	46	45	46	0	61	60	61	0	85	87	86	1	99	98	98	-1
R8	4545 Sand Point Way	46	44	45	-1	61	59	60	-1	92	87	90	-2	101	98	100	-1
R9	**4412 43rd Ave. NE**	**35**	**38**	**37**	**2**	**50**	**53**	**52**	**2**	**68**	**76**	**74**	**6**	**87**	**88**	**88**	**1**
R10	**4415 43rd Ave. NE**	**36**	**39**	**38**	**2**	**51**	**54**	**53**	**2**	**69**	**77**	**75**	**6**	**88**	**90**	**89**	**1**
R11	4720-4724 44th St. NE	43	43	43	0	58	58	58	0	86	85	85	-1	97	97	97	0
R12	**4530 45th St. NE**	**36**	**38**	**37**	**1**	**51**	**53**	**52**	**1**	**70**	**76**	**75**	**5**	**89**	**90**	**89**	**0**
R13	**Talaris NE Corner**	**38**	**41**	**38**	**0**	**53**	**57**	**53**	**0**	**75**	**85**	**81**	**6**	**93**	**96**	**94**	**1**
R14	40th Ave NE/Terrace Dr NE	46	45	45	-1	61	60	60	-1	87	85	83	-4	98	96	96	-2

Notes:
Receptor Location 1 in 1991 FEIS
Receptor Location 2 in 1991 FEIS
† AAD = Annual Average Day is 60 flights per year, 75% during daytime, 25% during nighttime
‡ BD = Busiest Day is 2 daytime flights and 2 nighttime flights per day
Daytime is from 7:00 am until 10:00 pm, nighttime is from 10:00 pm until 7:00 am.
All receptors are assumed to be 5 ft above ground level.
DNL = Day-Night Average Sound Level; Lmax = Maximum Sound Level;
SEL = Sound Exposure Level; dBA = A-weighted decibels re 20 μPa