

3.2 Tree Risk Assessment

Table 2: Summary of trees that pose a high or extreme risk at the time of assessment. To meet these criteria there was a probable or imminent likelihood of failure and will impact a target with significant or severe consequences. Trees that meet these criteria are shown in the table below. Residual risk will be discussed for any tree within the table that is not a complete removal. **Note that: the subject site is a public fair that is highly occupied when open, and the occupants can move freely through the fairgrounds which make predicting the sites target types difficult. In this assessment we recommend any tree located in a public area with a Probable Likelihood of failure to be removed. Note there are other trees recommended for removal that are not included in this table due to their small size of lack of known targets, the owner or manager has the right to direct us to assign higher target values if they feel it is warranted.**

Tree		Target	Likelihood			Consequences	Risk Rating	Action	Residual Risk
Number	Condition	Type	Failure	Impact	Failure & Impact				
351	Poor	A, B	Probable	High	Likely	Significant	High	Remove	None
374	Poor	A, B	Probable	High	Likely	Significant	High	Remove	None
550	Poor	A,	Probable	High	Likely	Significant	High	Remove	None
551	Poor	A,	Probable	High	Likely	Significant	High	Remove	None
552	Poor	A,	Probable	High	Likely	Significant	High	Remove	None

Target Types

- A Person
- B Building

4.0 Tree Retention, Removal and Replacement

4.1 Tree Retention

Currently the we have only designated trees to be removed that pose a safety risk to the site. During the planning stage conflicts may arise and detailed site plans that include future land-use changes should be review by the Project Arborist to ensure trees can be safely retained and to minimize tree conflicts.

4.2 Tree Removal

Tree removals have been recommended to accommodate the proposed development and/or due to tree health and structure. Refer to Appendix 1 for the tree removal comments by tree and to the Tree Protection and Removal Plan for the location of trees to be removed. The following trees are recommended for removal per the criteria outlined in Section 4.5 of the City of Vancouver Protection of Trees Bylaw No. 9958:

Remove Tree # 351, 352, 550, 551, and 552 pursuant to:

- a) an arborist who is a tree risk assessor certified by the International Society of Arboriculture certifies that the tree is a hazardous tree;

Remove Tree #'s ROW 04 (20 trees), ROW11 (6 trees), ROW12(4trees) pursuant to, 294, 339, 354, 355, 374, 417, 427, 430, 435, 482, 527, pursuant to:

- f) an arborist who is a tree risk assessor certified by the International Society of Arboriculture certifies that the tree is a hazardous tree;
- g) an arborist certifies that damage to the tree has occurred to the extent that the tree is likely to suffer from disease or die prematurely;
- or
- h) an arborist certifies that the tree is dying and is likely to be dead within six months or is dead.

***Note that: the subject site is a public fair that is highly occupied when open, and the occupants can move freely through the fairgrounds which make predicting the sites target types difficult. In this assessment we recommend any tree located in a public area with a Probable Likelihood of failure to be removed.**

***Note trees recommended for removal that are not included in the High-Risk category, may at risk to fail but due to their small size of lack of known targets, do not meet the threshold for the Tree Risk Assessment. The Land owner or manager has the right to direct us to assign higher target values if they feel it is warranted.**

Appendix 1 Complete Tree Inventory Table

The complete tree inventory below contains information on tree attributes and recommendations for removal or retention. Tree ownership in this inventory table is not definitive, its determination here is based on information available from the legal site survey, GPS locations, and field assessment during site visits. Tree protection Zones are measured from the outer edge of a tree's stem. If using these measurements for mapping the tree protection zone, ½ the tree's diameter must be added to the distance to accommodate a survey point at the tree's center. Where tree protection fencing is proposed to vary from the minimum municipal TPZ, comments will be included in the Retention/TPZ comments and shown on the Tree Retention and Removal Plan.

*TPZ is the tree protection zone size required by the relevant municipal bylaw or, if not defined, the project arborist.

Tag #	Species	DBH (cm)	Height (m)	Health and Structure Rating	Comments	Retention Value Rating	Retain/Remove	Retention/TPZ Comments	TPZ
233	Cedar (T. plicata)	50	12	Moderate	Between gravel path and roller coaster. Subdominant stem from 6 m, union ok. Crown has south east side pruned back for roller coaster clearance.	Medium	Retain		3
234	Cedar (T. plicata)	56	12	Moderate	Two equal stems from base. Grade recently raised at base on east side by 0.75 m for compacted pad to support containers. Crown pruned for container clearance.	Medium	Retain		3.4
235	Cedar (T. plicata)	56	12	Moderate	Single stem. Grade recently raised 0.5 m from base on east side by 0.75 m for compacted pad to support containers. Crown pruned for container clearance. Form good. Foliage healthy.	Medium	Retain		3.4
236	Locust (R. pseudoacacia)	120	15	Poor	Between temporary buildings and security fence. Four equal stems from base. Stems spreading, one with wound and advanced decay at 4 m over fence.	Low	Retain		7.2
238	Cedar (T. plicata)	90	8	Moderate	Asphalt on all sides 2.5 m from base. 5 stems from base, cumulative DBH estimate. Crown conical. Foliage healthy.	Medium	Retain		5.4
238	Maple (A. platanoides)	23	9	Moderate	Shed on concrete pad immediately at base. Roof touching trunk. Crown structure from multiple scaffold branches at 4 m.	Medium	Retain		2

Tag #	Species	DBH (cm)	Height (m)	Health and Structure Rating	Comments	Retention Value Rating	Retain/ Remove	Retention/TPZ Comments	TPZ
239	Maple (A. platanooides)	23	9	Moderate	In plated bed, 1 m from paving. Crown from fork at 3 m, union good. Crown form rounded.	Medium	Retain		2
240	Maple (A. platanooides)	23	9	Moderate	In plated bed, 1.5 m from paving. Crown from three-way fork at 3 m, unions good. Crown entirely asymmetrical to north.	Medium	Retain		2
241	Cherry (P. serrulata)	40	6	Poor	In planting bed. Two stems from acute union at base, 25 and 15 cm DBH. Canker on largest stem. Crown spreading, low vigour.	Low	Retain		2.4
242	Plum (P. cerasifera)	23	6	Poor	In planting bed. Extensive column of dead bark in trunk and resin flux. Crown dying back.	Low	Retain		2
243	Cherry (P. serrulata)	25	6	Moderate	In gravel. Wound or canker at base. 5 stems from 1.5 m, unions good. Crown spreading, several pruning wounds.	Medium	Retain		2
244	Tulip tree (L. tulipifera)	31	10	Good	Growing in raised bed. Crown wide, rounded, good branch structure.	High	Retain		2
245	Cherry (P. serrulata)	24	3	Poor	In raised planting box, 3 x 3 m. Three equal stems from acute union at base. Topped.	Low	Retain		2
246	Pine (P. nigra)	50	15	Moderate	Growing in raised bed, edges 1.5 m on three sides. Fork with good union at 6 m. Crown rounded.	Medium	Retain		3
247	Pine (P. nigra)	54	15	Moderate	Growing in raised bed, edges 1.5 m on three sides. Three stems from good unions at 3 m. Crown conical. Foliage healthy.	Medium	Retain		3.2
248	Pine (P. nigra)	35	15	Moderate	Growing as part of group in large raised bed. Single stem has moderate basal sweep. Crown slightly asymmetrical to east.	Medium	Retain		2.1
249	Pine (P. nigra)	36	15	Moderate	Growing as part of group in large raised bed. U-shaped fork at 8 m. Healthy.	Medium	Retain		2.2
250	Pine (P. nigra)	35	15	Moderate	Growing as part of group in large raised bed. Single stem with kink at 12 m. Crown slightly asymmetrical to west.	Medium	Retain		2.1
251	Pine (P. nigra)	32	12	Moderate	Growing as part of group in large raised bed. Single stem. Crown slightly asymmetrical to west.	Medium	Retain		2

Tag #	Species	DBH (cm)	Height (m)	Health and Structure Rating	Comments	Retention Value Rating	Retain/ Remove	Retention/TPZ Comments	TPZ
252	Pine (P. nigra)	32	12	Moderate	Growing as part of group in large raised bed. Single stem. Crown slightly asymmetrical to east.	Medium	Retain		2
253	Pine (P. nigra)	35	12	Moderate	Growing as part of group in large raised bed, edge 1.5 on two sides. Stem has moderate basal sweep, u-shaped fork at 8 m. Crown asymmetrical to south.	Medium	Retain		2.1
254	Pine (P. nigra)	35	12	Moderate	Growing as part of group in large raised bed, edge 1 m to east. Acute fork with included bark at 4 m. Crown asymmetrical to south.	Medium	Retain		2.1
255	Pine (P. nigra)	28	12	Moderate	Growing as part of group in large raised bed, edge 1 m to west. Acute fork with included bark at 5 m. Crown asymmetrical to south.	Medium	Retain		2
256	Pine (P. nigra)	35	12	Moderate	Growing as part of group in large raised bed, edge 1 m to east. Acute fork with included bark at 3 m. Crown asymmetrical to north. Branch failure would land on ride roof.	Medium	Retain		2.1
257	Pine (P. nigra)	50	14	Moderate	Single tree growing at end of 1.5 m wide raised bed adjacent to ride. U-shaped union at 7 m. Crown conical.	Medium	Retain		3
258	Pine (P. nigra)	53	16	Moderate	Single tree at end of hedge. 1 m from retaining wall around ride to south. Lawn to north. Single stem. Good branch structure. Healthy, dense crown.	Medium	Retain		3.2
259	Douglas-fir (P. menziesii)	23	11	Poor	In lawn. Waterlogged soil, possible grade raised at base. Grows with 5 degree lean to south. Foliage sparse.	Low	Retain		2
260	Pine (P. nigra)	54	15	Moderate	In lawn, 2 m from asphalt to west. Four scaffold branches arising at 4 m, all with acute unions and included bark. Large crown, asymmetrical to south west.	Medium	Retain		3.2
261	Cedrus (C. atlantica)	32	15	Good	Part of group. In lawn, 1.5 m from concrete slab. Single stem free from defects. Crown asymmetrical to north west. Foliage moderate density. Light screwed to stem at 3 m.	High	Retain	Remove light and wires	2

Tag #	Species	DBH (cm)	Height (m)	Health and Structure Rating	Comments	Retention Value Rating	Retain/ Remove	Retention/TPZ Comments	TPZ
262	Cedrus (C. atlantica)	32	15	Good	Part of group. In lawn, 1.5 m from concrete slab. Single stem free from defects. Crown slightly asymmetrical to south. Foliage moderate density.	High	Retain		2
263	Cedrus (C. atlantica)	32	15	Good	Part of group. In lawn, 1.5 m from concrete slab. Single stem free from defects. Crown asymmetrical to south east. Foliage moderate density. Light screwed to stem at 3 m.	High	Retain	Remove light and wires	2
264	Maple (A. platanoides)	20	10	Good	Growing in lawn. Minor exposed roots with mower damage. Round crown with good structure.	High	Retain		2
265	Pine (P. nigra)	48	17	Moderate	Has strong sweep south east in bottom 4 m. Three scaffold branches from acute unions at 4 m. Crown asymmetrical to south east.	Medium	Retain		
266	Cedrus (C. atlantica)	32	15	Good	Part of group in lawn. Single stem free from defects. Crown asymmetrical to east. Foliage density good. Light screwed to stem at 3 m.	High	Retain	Remove light and wires	2
267	Cedrus (C. atlantica)	34	15	Good	Part of group in lawn. Single stem free from defects. Crown asymmetrical to east. Foliage density good.	High	Retain		2
268	Cedrus (C. atlantica)	34	15	Good	Part of group in lawn. Single stem free from defects. Crown asymmetrical to east. Foliage density good. Light screwed to stem at 3 m.	High	Retain	Remove light and wires	2
269	Cedar (T. plicata)	27	14	Good	In group of three, in lawn. Asphalt 1.5 m from base. Single stem free from defects. Full crown. Healthy foliage.	High	Retain		2
270	Cedar (T. plicata)	27	14	Good	In row of 3, in lawn. Asphalt 1 m from base. Single stem free from defects. Full crown. Healthy foliage.	High	Retain		2
271	Cedar (T. plicata)	27	14	Good	In group of three, in lawn. Asphalt 0.5 m from base. Single stem free from defects. Full crown. Healthy foliage.	High	Retain		2
272	Cedar (T. plicata)	27	14	Good	In group of three, in lawn. Asphalt 0.5 m from base. Single stem free from defects. Full crown. Healthy foliage.	High	Retain		2

Tag #	Species	DBH (cm)	Height (m)	Health and Structure Rating	Comments	Retention Value Rating	Retain/Remove	Retention/TPZ Comments	TPZ
273	Cedar (T. plicata)	27	14	Moderate	In group of three, in lawn. Machinery impact damage at base. Asphalt 0.5 m from base. Single stem free from defects. Full crown. Healthy foliage.	Medium	Retain		2
274	Maple (A. platanoides)	23	8	Good	In lawn. No major defects in crown structure. Form is rounded.	High	Retain		2
275	London Plane (P. acerifolia)	27	11	Moderate	Adjacent to vehicle access. Surrounded by asphalt, in 1.5 x 1.5 planting opening with compacted gravel. 2/3 of crown removed to east. Light screwed on at 3 m. Free from structural defects.	Medium	Retain	Remove light and wires	2
276	London Plane (P. acerifolia)	29	13	Moderate	Adjacent to vehicle access. Surrounded by asphalt, in 1.5 x 1.5 planting opening with compacted gravel. Free from structural defects.	Medium	Retain		2
277	London Plane (P. acerifolia)	26	12	Moderate	Adjacent to vehicle access. Surrounded by asphalt, in 1.5 x 1.5 planting opening with compacted gravel. Free from structural defects.	Medium	Retain		2
278	London Plane (P. acerifolia)	26	12	Moderate	Adjacent to vehicle access. Surrounded by asphalt, in 1.5 x 1.5 planting opening with compacted gravel. Free from structural defects.	Medium	Retain		2
279	London Plane (P. acerifolia)	22	10	Moderate	Surrounded by asphalt, in 1.5 x 1.5 planting opening with compacted gravel. Free from structural defects. Topped at 10 m.	Medium	Retain		2
280	London Plane (P. acerifolia)	24	13	Moderate	Surrounded by asphalt, in 1.5 x 1.5 planting opening with compacted gravel. Free from structural defects.	Medium	Retain		2
281	London Plane (P. acerifolia)	22	10	Moderate	Surrounded by asphalt, in 1.5 x 1.5 planting opening with compacted gravel. Grows with 3-4 degree lean to east. Crown asymmetrical to east, wires through crown. Light at 3 m. Impact to large branch 3 m.	Medium	Retain	Remove light and wires	2
282	London Plane (P. acerifolia)	30	13	Good	Surrounded by asphalt, in 1.5 x 1.5 planting opening with compacted gravel. Free from structural defects. Good structure and crown form. Light at 3 m.	High	Retain	Remove light and wires	2

Tag #	Species	DBH (cm)	Height (m)	Health and Structure Rating	Comments	Retention Value Rating	Retain/ Remove	Retention/TPZ Comments	TPZ
283	Maple (A. rubrum)	14	8	Good	Memorial tree. In 1 x 1 m planting pit surrounded by asphalt. Healthy young tree with good form.	High	Retain		2
284	Maple (A. rubrum)	15	8	Good	In 1 x 1 m planting pit surrounded by asphalt. Healthy young tree with good form.	High	Retain		2
285	Maple (A. rubrum)	15	9	Good	Memorial tree. In 1 x 1 m planting pit surrounded by asphalt. Healthy young tree with good form.	High	Retain		2
286	Pine (P. nigra)	32	10	Moderate	Adjacent to small roller coaster. Four stems from 5 m, unions moderate. Crown healthy.	Medium	Retain		2
287	Pine (P. nigra)	18	6	Moderate	Young tree adjacent to roller coaster. Minor sweep at base. Crown healthy.	Medium	Retain		2
288	Cedrus (C. deodara)	28	11	Good	Within roller coaster loop. Healthy tree. Good form.	High	Retain		2
289	Cedrus (C. deodara)	20	10	Moderate	Within roller coaster loop. Root ball binding cord still at base. Foliage a little yellow. Good form	Medium	Retain		2
290	Maple (A. saccharinum)	48	13	Poor	1 m from concrete pad and hut, 1 m from asphalt paving. Trunk has large occluded seam to 3.5 m. 8 cm diameter cavity from branch loss on opposite side. Crown previously topped at 7 m with regrowth from epicormic shoots. Crown entirely asymmetrical to south east.	Low	Retain		2.9
291	Poplar (P. nigra)	67	25	Poor	Concrete pad and hut immediately at base. Multiple weak, acute unions throughout crown. Minor branch shedding.	Low	Retain		4
292	Maple (A. circinatum)	27	5	Poor	Three equal stems from decayed union at base. Crown entirely asymmetrical to east.	Low	Retain		2
293	Maple (A. saccharinum)	52	17	Moderate	Tree 1 m from asphalt. Grows with lean 10 degrees east. Crown entirely asymmetrical to east. Over-extended branches from poor and moderate unions.	Medium	Retain		3.1

Tag #	Species	DBH (cm)	Height (m)	Health and Structure Rating	Comments	Retention Value Rating	Retain/Remove	Retention/TPZ Comments	TPZ
294	Maple (A. saccharinum)	52	17	Poor	Tree 1.5 m from asphalt. Grows with lean 10 degrees east. Two large scaffold branches from poor union at 4 m. Appears to be partly occluded decay column below union to grade. Crown entirely asymmetrical to east. Overextended branches typically for species.	Low	Remove	Due to poor condition.	3.1
295	Beech (F. sylvatica)	53	13	Moderate	Asphalt in all sides of tree 2 m away, power pole 1 m from base, north side removed for utility line clearance, scaffold branch structure is poor, crown entirely asymmetrical to south, 7 m spread	Medium	Retain		3.2
296	Beech (F. sylvatica)	72	18	Moderate	DBH measured at 1 m from grade, asphalt 2m to north and south. 4 vertical stems arising from acute unions at 1.5 m, included bark present, unions weak to moderate strength, crown removed to north for utility clearance.	Medium	Retain		4.3
297	London Plane (P. acerifolia)	72	12	Moderate	Asphalt 2 m south and 5 m west of tree, small broken branches hanging in canopy, large somewhat horizontal laterals growing over path, 8 m dripline radius.	Medium	Retain		4.3
298	London Plane (P. acerifolia)	41	9	Moderate	2 m away from asphalt path, medium sized rocks near base of tree. 2 stems arise at 2 m from u-shaped union. Some laterals topped/broken. Some small / medium sized horizontals over path. Dripline radius 7 m.	Medium	Retain		2.5
299	Tulip tree (L. tulipifera)	75	12	Moderate	In grass 2 m west of asphalt parking lot and south of modular building. 4 large laterals pruned to trunk and occluded 1 to 1.5 m up tree. One large leader broken off lateral on east side of tree. Medium sized horizontal laterals growing over parking. Dripline radius 6 m.	Medium	Retain		4.5
300	Tulip tree (L. tulipifera)	53	12	Moderate	6 m west of asphalt parking lot and on grass slope. Central leader growing east. Dripline radius 7 m spread	Medium	Retain		3.2

Tag #	Species	DBH (cm)	Height (m)	Health and Structure Rating	Comments	Retention Value Rating	Retain/ Remove	Retention/TPZ Comments	TPZ
308	Tulip tree (L. tulipifera)	68	13	Poor	5 m west of asphalt parking lot and on grass slope. Poor branch structure, codominant stems arising at 6 m. Dripline radius 7 m.	Low	Retain		4.1
309	Tulip tree (L. tulipifera)	71	15	Moderate	7 m west of asphalt parking lot on grass slope. Codominant stems arising at 12 m. Dripline radius 6 m.	Medium	Retain		4.3
310	Tulip tree (L. tulipifera)	73	15	Moderate	12 m north and 11 m east of retained wall, at top of grass slope. Exposed surface roots, one branch near ride. Dripline radius 7 m.	Medium	Retain	Consider pruning for roller coaster clearance.	4.4
311	Locust (G. triacanthos)	21	6	Poor	Open grown tree, on grass slope 3 m north of retaining wall. Poor structure from stem unions. Dripline radius 4 m.	Low	Retain		2
312	Locust (G. triacanthos)	20	6	Poor	Open grown tree, on grass slope 3 m north of retaining wall. Poor structure from stem unions. Dripline radius 4 m.	Low	Retain		2
313	Locust (G. triacanthos)	20	7	Poor	Open grown tree, on grass slope 3 m north of retaining wall. Poor structure from stem unions. Dripline radius 4 m.	Low	Retain		2
314	Locust (G. triacanthos)	20	7	Moderate	Open grown, on slope, poor structure, 4 m spread	Medium	Retain		2
315	Locust (G. triacanthos)	21	7	Moderate	3 m north of retaining wall and 5 m east of concrete steps. Open grown, on slope, exposed surface root, poor structure. Dripline radius 4 m.	Medium	Retain		2
316	Locust (R. pseudoacacia)	61	9	Moderate	3 m north of retaining wall. Open grown, on slope. 3 stems of 20, 20 and 21 DBH, one stem emerges from base with included bark, the other two 1 m up tree with included bark, one lateral growing through union of tree. Dripline radius 3 m.	Medium	Retain		3.7
317	Oak (Q. rubra)	48	14	Moderate	On moderate slope. 4 m east of retaining wall and washroom building, 9 m west of asphalt path, 1 m north from amphitheatre stands. Exposed surface roots. Slight lean south. Crown asymmetrical to south. Dripline radius 7 m.	Medium	Retain		2.9

Tag #	Species	DBH (cm)	Height (m)	Health and Structure Rating	Comments	Retention Value Rating	Retain/ Remove	Retention/TPZ Comments	TPZ
318	Oak (Q. robur)	42	12	Moderate	On gentle slope. 2 m east of retaining wall and washroom building, 10 m west of asphalt path, 4 m north from amphitheatre stands. Exposed surface roots, slight lean to west. Canopy growing over washroom building. Dripline radius 6 m.	Medium	Retain		2.5
319	Poplar (P. bal. tri)	99	22	Poor	6 m east of retaining wall and washroom building. 4 m west of asphalt path, 5 m north from amphitheatre stands. Exposed surface roots. Columnar form typical of variety. Main unions appear good. Dripline radius 6 m. Appears to have dead wood and potential decay columns between buttress roots in southwest side.	Low	Retain	Advanced risk assessment recommended to confirm/determine decay extent.	5.9
320	Cherry (Prunus sp.)	25	10	Moderate	DBH approximate, 0.5 m east of washroom building, exposed surface roots, wound 3 m up tree compartmentalized with resin flux. Dripline radius 4 m.	Medium	Retain		2
321	Cedar (T. plicata)	24	8	Moderate	On gentle slope. 3 m west of asphalt, 1 m southwest of retaining wall. Exposed surface roots, pyramidal form, growing in shrub bed, 4 m spread	Medium	Retain		2
322	Oak (Q. rubra)	28	12	Moderate	1 m west and 2.5 m north of asphalt, 2 m north east of light stand. Branch structure haphazard. Dripline radius 5 m.	Medium	Retain		2
323	Maple (A. platanooides)	40	9	Moderate	Asphalt 1 m north, 1.5 m south and 0.5 m west. 1.5 m north of wooden balcony. Girdling root at base, multiple stems arise at 1.5 m from acute unions with included bark. Dripline radius 4m.	Medium	Retain		2.4
324	Oak (Q. rubra)	32	12	Moderate	0.3 m south west and 1 m north east of wooden balconies. 2 m north west of amphitheatre stands, 2 m south east of asphalt. Exposed surface roots, tree lateral growing horizontal and wrapped partially around trunk. Dripline radius 6 m.	Medium	Retain		2

Tag #	Species	DBH (cm)	Height (m)	Health and Structure Rating	Comments	Retention Value Rating	Retain/ Remove	Retention/TPZ Comments	TPZ
325	Hornbeam (C. betulus)	42	12	Moderate	In landscaped bed, 2 m south of asphalt curb and pathway, 4.5 m north of building. Multiple stems from acute unions at 1.5 m. Dripline radius 4 m.	Medium	Retain		2.5
326	Oak (Q. rubra)	60	11	Moderate	1 m north of amphitheatre stands. Asphalt within 1 m on all sides. Exposed surface roots, poor structure at top of tree. Dripline radius.	Medium	Retain		3.6
327	Poplar (P. bal. tri)	105	22	Poor	Tree at top of stadium seating, has asphalt and retaining walls to base on all sides. Light pole 0.3 m from base. Potential decay column at base on north east side. Multiple upright stems, unions moderate to good for species. Minor dead wood and hanging dead branch in crown. No major branch shedding.	Low	Retain	Advanced risk assessment recommended to confirm/determine decay extent.	6.3
328	Oak (Q. rubra)	49	14	Poor	Tree located directly north of asphalt path and east of balcony and west of asphalt retained wall/ step, 0.4 m south of retained asphalt wall/ step, wooden wedge between tree and balcony, primary leader at top of tree is broken, 7 m spread	Low	Retain		2.9
329	Oak (Q. rubra)	51	13	Poor	Asphalt to base on all sides. Large torn wound occluding between 2 and 3 m, moderate decay. Crown has central stem but laterals becoming dominant. Dripline radius 8 m.	Low	Retain	Advanced risk assessment recommended to confirm/determine decay extent.	3.1
330	Poplar (P. bal. tri)	74	18	Poor	Tree in grass, 3 m from top of stadium seating. Exposed surface roots with moderate damage. Decay column evident at base on north east side. Main unions appear good for species. Upright columnar form, typical for variety.	Low	Retain	Advanced risk assessment recommended to confirm/determine decay extent.	4.4
331	Plane (P. x. acerifolia)	48	13	Moderate	In compacted gravel. Wires through crown. Multiple occluded pruning wounds between 3 and 5 m. Scaffold branches arching to south.	Medium	Retain		2.9

Tag #	Species	DBH (cm)	Height (m)	Health and Structure Rating	Comments	Retention Value Rating	Retain/ Remove	Retention/TPZ Comments	TPZ
332	Oak (Q. rubra)	49	19	Moderate	In strip 6 m wide strip between parking lots. Concrete chamber and hydrant both 1 m from base. Upright branching, unions good.	Medium	Retain		2.9
333	Oak (Q. rubra)	50	19	Moderate	In strip 6 m wide strip between parking lots. Multiple occluded pruning wounds in lower trunk. Upright branching, unions good. Abundant epicormic shoots.	Medium	Retain		3
334	Oak (Q. rubra)	54	19	Moderate	In strip 6 m wide strip between parking lots. Two scaffold branches from acute union at 4 m, minor included bark possible. Light screwed to lateral branch, with wires.	Medium	Retain	Remove lights and wires	3.2
335	Oak (Q. rubra)	49	19	Moderate	In strip 6 m wide strip between parking lots. Concrete chamber 1 m from base. Upright branching, unions partly obscured, but appear good.	Medium	Retain		2.9
336	Oak (Q. rubra)	57	19	Moderate	In strip 6 m wide strip between parking lots. Asphalt above grade at base. Upright branching, unions good.	Medium	Retain		3.4
337	Oak (Q. rubra)	49	19	Good	In strip 6 m wide strip between parking lots. Fresh gravel above grade to base, east. Single dominant stem, dense lateral branches.	High	Retain		2.9
338	Oak (Q. rubra)	75	21	Good	In 6 m wide strip between parking lots. Stem grows with lean 5 degrees south. Crown from large structural branches arising at 5 m, unions moderate to good. Branches overextended as typical for species. Dripline radius 12 m.	High	Retain		4.5
339	Plum (P. cerasifera)	38	7	Moderate	In 6 m wide strip between parking lots. Unions good. Minor twig dieback.	Medium	Retain		2.3
340	Plum (P. cerasifera)	39	7	Poor	In 6 m wide strip between parking lots. Trunk leans 35 degrees east. Poor main union. Extensive decay throughout.	Low	Remove	Due to poor condition. Remove to mitigate Safety risk	2.3

Tag #	Species	DBH (cm)	Height (m)	Health and Structure Rating	Comments	Retention Value Rating	Retain/ Remove	Retention/TPZ Comments	TPZ
341	Oak (Q. rubra)	75	21	Moderate	In 5 x 5 m plating inset in asphalt. Crown from large structural branches arising at 3 to 6 m, unions moderate to good. Branches overextended as typical for species. Electrical wires screwed to trunk. Dripline radius 12 m.	Medium	Retain	Remove electrical hardware from tree.	4.5
342	Oak (Q. rubra)	62	19	Good	In 5 x 5 m planting inset. Has central stem. Unions good. Form mostly upright.	High	Retain		3.7
343	Cedar (T. plicata)	92	24	Moderate	Asphalt to base on south side. High voltage utility wires 6 m to north east. No root collar flare at all. Column of dead cambium north east side. Single stem to acute fork at 19 m. Crown conical. Foliage healthy.	Medium	Retain		5.5
344	Oak (Q. rubra)	81	21	Moderate	In 4.5 m wide grass strip between asphalt. Hydrant 2 m from base. Crown from large structural branches arising at 3 to 6 m, unions moderate to good. Branches overextended as typical for species. Dripline radius 12 m.	Medium	Retain		4.9
345	Oak (Q. rubra)	41	16	Moderate	In 4 m wide grass strip between asphalt. Dominant stem to top. Crown completely asymmetrical to east. Dripline radius 7 m.	Medium	Retain		2.5
346	Oak (Q. rubra)	38	12	Moderate	In 4 m wide grass strip between asphalt. Top lost at 7 m, two large laterals becoming dominant to west. Dripline radius 7 m.	Medium	Retain		2.3
347	Oak (Q. rubra)	43	15	Moderate	In 4 m wide grass strip between asphalt. Branch structure mostly upright, unions moderate to good. Dripline radius 7 m. Electrical connection screwed to trunk.	Medium	Retain	Remove electrical hardware from tree.	2.6
348	Oak (Q. rubra)	41	15	Moderate	In 4 m wide grass strip between asphalt. Top lost at 9 m, laterals becoming dominant. Dripline radius 9 m. Electrical connection screwed to trunk.	Medium	Retain	Remove electrical hardware from tree.	2.5

Tag #	Species	DBH (cm)	Height (m)	Health and Structure Rating	Comments	Retention Value Rating	Retain/ Remove	Retention/TPZ Comments	TPZ
349	Pine (<i>P. nigra</i>)	93	27	Moderate	In 4 m wide grass strip between asphalt. No root collar flare. Large kink at 6 m, appears codominant stem lost a long time ago, adequate reaction wood growth. Remaining crown heavily asymmetrical to south. Foliage healthy.	Medium	Retain		5.6
350	Maple (<i>A. pseudoplatanus</i>)	49	10	Moderate	In 4 m wide grass strip between asphalt. 1 m from curb to north. Topped several times.	Medium	Retain		2.9
351	Maple (<i>A. platanoides</i>)	61	16	Poor	Asphalt to base, extensively lifted by roots. 0.6 m from building, 0.3 m from curb. V-pruned for utility and high voltage wires. Branches over building have extensive decay on upper sides.	Low	Remove	Due to poor condition. Remove to mitigate Safety risk	3.7
352	Plane (<i>P. x. acerifolia</i>)	75	16	Moderate	Asphalt to base, extensive root heaving. 0.6 m from building, 0.3 m from curb. V-pruned for utility and high voltage wires. Branches appear free from major structural defects, but wide spreading and overextended north and south.	Medium	Retain		4.5
353	Maple (<i>A. platanoides</i>)	43	10	Poor	In 4 m wide grass strip between asphalt. 1 m from curb. Topped at 2.5 m. Electrical wires and boxes screwed to tree. Amateur bracing between branches, not fit for purpose.	Low	Retain	Replace bracing or remove tree. Remove electrical hardware from tree.	2.6
354	Maple (<i>A. platanoides</i>)	47	10	Poor	Asphalt to base, extensive root heaving. 0.6 m from building, 0.3 m from curb. V-pruned for utility and high voltage wires. Branches overextended above building. Large wound with cavity into trunk at 4 m.	Low	Remove	Due to poor condition. Remove to mitigate Safety risk	2.8
355	Maple (<i>A. platanoides</i>)	49	8	Poor	Asphalt to base, extensive root heaving. 0.6 m from building, 0.3 m from curb. V-pruned for utility and high voltage wires. Branches Large wound with cavity and extensive advanced decay in trunk at 4 m. Tops of all branches lost or pruned.	Low	Remove	Due to poor condition. Remove to mitigate Safety risk	2.9
356	Cedar (<i>T. occidentalis</i>)	40	6	Poor	In 4 m wide grass median. Wide tree with multiple stems. Top starting to separate.	Low	Retain		2.4

Tag #	Species	DBH (cm)	Height (m)	Health and Structure Rating	Comments	Retention Value Rating	Retain/ Remove	Retention/TPZ Comments	TPZ
357	Laburnum (L. x watereri)	67	9	Poor	In 4 m wide grass median. Stem grows with lean 10 degrees south. Dead columns of cambium, poor unions, with possible decay. Electrical box and wires screwed to stem.	Low	Retain	Remove electrical hardware from tree.	4
358	Cedar (T. occidentalis)	30	6	Poor	In 4 m wide grass median. Wide tree with multiple stems girdling by bracing straps. Top dying.	Low	Retain		2
359	Chestnut (C. sativa)	77	12	Good	In 4 m wide median. Short, stout tree with good unions and structure. Electrical wires and box screwed to stem.	High	Retain	Remove electrical hardware from tree.	4.6
360	Cedar (T. occidentalis)	25	6	Poor	In 4 m wide grass median. Wide tree with multiple stems. One stem dying.	Low	Retain		2
361	Cedar (T. occidentalis)	25	6	Poor	In 4 m wide grass median. Wide tree with multiple stems. One stem dying.	Low	Retain		2
362	Laburnum (L. x watereri)	71	9	Poor	In 4 m wide grass median. Stem grows with lean 10 degrees east. Decay column with cavity, poor unions. Electrical box and wires screwed to stem.	Low	Retain	Remove electrical hardware from tree.	4.3
363	Cedar (T. occidentalis)	35	6	Poor	In 4 m wide grass median. Wide tree with multiple stems. One stem dying.	Low	Retain		2.1
364	Cedar (T. occidentalis)	40	6	Moderate	In 4 m wide grass median. Wide tree with multiple stems.	Medium	Retain		2.4
365	Cypress (C. lawsoniana)	67	14	Moderate	1 m from building. Two main stems, 33 and 34 cm DBH, both have strong sweep to north. Crown asymmetrical to north, full. Foliage healthy.	Medium	Retain		4
366	Cypress (C. pisifera)	54	19	Moderate	1 m from building east and south. Multiple stems from acute unions in upper half of crown. Crown full, healthy.	Medium	Retain		3.2
367	Cedar (T. occidentalis)	40	6	Moderate	In 4 m wide grass median. Wide tree with multiple stems.	Medium	Retain		2.4
368	Cedar (T. occidentalis)	40	6	Moderate	In 4 m wide grass median. Wide tree with multiple stems.	Medium	Retain		2.4
369	Laburnum (L. x watereri)	46	8	Poor	In 4 m wide grass median. Stem grows with lean 10 degrees south west. Decay column	Low	Retain	Remove electrical hardware from tree.	2.8

Tag #	Species	DBH (cm)	Height (m)	Health and Structure Rating	Comments	Retention Value Rating	Retain/ Remove	Retention/TPZ Comments	TPZ
					with cavity, poor unions. Electrical box and wires screwed to stem.				
370	Cedar (T. occidentalis)	40	6	Poor	In 4 m wide grass median. Wide tree with multiple stems, most lean 45 degrees south east.	Low	Retain		2.4
371	Cedar (T. occidentalis)	40	6	Moderate	In 4 m wide grass median. Wide tree with multiple stems, bracing straps girdling stems.	Medium	Retain		2.4
372	Cedar (T. occidentalis)	40	6	Moderate	In 4 m wide grass median. Wide tree with multiple stems, bracing straps girdling stems.	Medium	Retain		2.4
373	Cedar (T. occidentalis)	40	6	Poor	In 4 m wide grass median. Wide tree with multiple stems, most lean 45 degrees south east.	Low	Retain		2.4
374	Laburnum (L. x watereri)	50	5	Poor	In 4 m wide grass median. Stem grows with lean 65 degrees east. Decay column extensive, almost complete stem, poor unions.	Low	Remove	Due to poor condition. Remove to mitigate Safety risk	3
401	Oak (Q. palustris)	22	11	Moderate	In 2 x 2 m planter, 0.75 m above grade of asphalt. Single stem. Crown raised to 4 m. Healthy young tree.	Medium	Retain		2
402	Oak (Q. palustris)	22	11	Moderate	In 2 x 2 m planter, 0.75 m above grade of asphalt. Single stem. Crown raised to 4 m. Healthy young tree.	Medium	Retain		2
403	Oak (Q. palustris)	24	11	Moderate	In 2 x 2 m planter, 0.75 m above grade of asphalt. Single stem. Crown raised to 4 m. Healthy young tree.	Medium	Retain		2
404	Oak (Q. palustris)	21	11	Moderate	In 2 x 2 m planter, 0.75 m above grade of asphalt. Single stem. Crown raised to 4 m. Healthy young tree.	Medium	Retain		2
405	Oak (Q. palustris)	23	11	Moderate	In 2 x 2 m planter, 0.75 m above grade of asphalt. Single stem. Crown raised to 4 m. Healthy young tree.	Medium	Retain		2

Tag #	Species	DBH (cm)	Height (m)	Health and Structure Rating	Comments	Retention Value Rating	Retain/Remove	Retention/TPZ Comments	TPZ
406	Oak (Q. palustris)	21	11	Moderate	In 2 x 2 m planter, 0.75 m above grade of asphalt. Single stem. Crown raised to 4 m. Healthy young tree.	Medium	Retain		2
407	Oak (Q. palustris)	25	11	Moderate	In 2 x 2 m planter, 0.75 m above grade of asphalt. Single stem. Crown raised to 4 m. Healthy young tree.	Medium	Retain		2
408	Oak (Q. palustris)	25	11	Moderate	In 2 x 2 m planter, 0.75 m above grade of asphalt. Single stem. Crown raised to 4 m. Healthy young tree.	Medium	Retain		2
409	Oak (Q. palustris)	25	11	Moderate	In 2 x 2 m planter, 0.75 m above grade of asphalt. Single stem. Crown raised to 4 m. Healthy young tree.	Medium	Retain		2
410	Oak (Q. palustris)	22	11	Moderate	In 2 x 2 m planter, 0.75 m above grade of asphalt. Single stem. Has opposing longitudinal seams from grade to 1.5 m, indicates transverse crack. Crown raised to 4 m. Healthy young tree.	Medium	Retain		2
411	Oak (Q. palustris)	28	11	Moderate	In 2 x 2 m planter, 0.75 m above grade of asphalt. Single stem. Crown raised to 4 m. Healthy young tree.	Medium	Retain		2
412	Oak (Q. palustris)	23	12	Moderate	In 2 x 2 m planter, 0.75 m above grade of asphalt. Single stem to union at 5 m, union appears sound. Crown raised to 4 m. Healthy young tree.	Medium	Retain		2
413	Oak (Q. palustris)	22	8	Moderate	In 2 x 2 m planter, 0.75 m above grade of asphalt. Single stem. Crown raised to 4 m. Healthy young tree.	Medium	Retain		2
414	Oak (Q. palustris)	21	9	Moderate	In 2 x 2 m planter, 0.75 m above grade of asphalt. Single stem. Crown raised to 4 m. Healthy young tree.	Medium	Retain		2
415	Oak (Q. palustris)	38	13	Moderate	In 2 x 2 m planter, 0.75 m above grade of asphalt. Roots heaving surrounding asphalt. Single stem. Crown raised to 4 m. Healthy young tree.	Medium	Retain		2.3

Tag #	Species	DBH (cm)	Height (m)	Health and Structure Rating	Comments	Retention Value Rating	Retain/ Remove	Retention/TPZ Comments	TPZ
416	Cypress (C. pisifera)	38	7	Moderate	In boulevard of Hasting St. Asphalt 0.75 m from base. Two stems from weak acute union at base. Foliage moderate density.	Medium	Retain		2.3
417	Maple (A. rubrum)	15	8	Poor	In boulevard of Hastings St. 0.75 m from asphalt. Recently hit by car. Partial root failure, leans at 10 degrees west. 60 % girdled.	Low	Remove	Due to poor condition. Remove to mitigate Safety risk	2
418	Cypress (C. pisifera)	45	7	Poor	In boulevard of Hasting St. Asphalt 0.5 m from base. Exposed surface roots with damage. Two stems from weak acute union with included bark at 2.5 m, no obvious fusion between stems for 7 cm. Foliage moderate density.	Low	Retain		2.7
419	Cedar (T. occidentalis)	20	6	Poor	In boulevard of Hastings St. 0.75 m from asphalt. Multiple stems spreading from base.	Low	Retain		2
420	Maple (A. rubrum)	24	13	Good	In boulevard of Hastings St. 0.75 m from asphalt. Power lines for bus at edge of crown. Healthy.	High	Retain		2
421	Cypress (C. pisifera)	45	7	Moderate	In boulevard of Hasting St. Asphalt 0.5 m from base. Two stems from weak acute union with moderate included bark at 2.5 m. Foliage moderate density.	Medium	Retain		2.7
422	Maple (A. rubrum)	23	13	Good	In boulevard of Hastings St. 0.75 m from asphalt. Power lines for bus at edge of crown. Healthy.	High	Retain		2
423	Cypress (C. pisifera)	47	7	Moderate	In boulevard of Hasting St. Asphalt 0.5 m from base. Subdominant stem from acute union at 2.5 m. Foliage moderate density.	Medium	Retain		2.8
424	Maple (A. rubrum)	23	13	Good	In boulevard of Hastings St. 0.75 m from asphalt. Power lines for bus at edge of crown. Healthy.	High	Retain		2
425	Hawthorn (Crataegus sp.)	10	4	Moderate	In boulevard of Hastings St. 0.75 m from asphalt sidewalk.	Medium	Retain		2
426	Cypress (C. pisifera)	39	11	Poor	1 m above path. 1.5 m south to sidewalk, 1.5 m north to retaining wall. Crown columnar.	Low	Retain		2.3

Tag #	Species	DBH (cm)	Height (m)	Health and Structure Rating	Comments	Retention Value Rating	Retain/ Remove	Retention/TPZ Comments	TPZ
					Poor branch unions in upper crown. Patchy dead foliage.				
427	Buckeye (Aesculus sp.)	25	5	Dead/Dying	Aesculus spp. 98% dead. Heavily decayed throughout.	Dead/Dying	Remove	Due to poor condition. Remove to mitigate Safety risk	2
428	Cypress (C. pisifera)	54	11	Moderate	2 m above path. 1.5 m south to sidewalk, 1.5 m north to retaining wall. Crown grows through 429.	Medium	Retain		3.2
429	Buckeye (Aesculus sp.)	54	18	Moderate	Aesculus spp. (Likely A. indica). 1 m above path, 1.5 m north from sidewalk, 1.5 m south from retaining wall. Scaffold branches have good unions. Crown wide spreading, slightly asymmetrical to north, bus power lines beneath crown.	Medium	Retain		3.2
430	Buckeye (Aesculus sp.)	25	5	Dead/Dying	Aesculus spp. 98% dead. Heavily decayed throughout.	Dead/Dying	Remove	Due to poor condition. Remove to mitigate Safety risk	2
431	Cypress (C. pisifera)	54	11	Poor	2 m above path. 1.5 m south to sidewalk, 1.5 m north to retaining wall. Two stems from below grade. Top heavily damaged.	Low	Retain		3.2
432	Cypress (C. pisifera)	39	11	Poor	2 m above path. 1.5 m south to sidewalk, 1.5 m north to retaining wall. No major structural defects. Patches of crown dieback.	Low	Retain		2.3
433	Buckeye (Aesculus sp.)	45	5	Poor	Aesculus spp. Two stems from acute union at 1 m. Haphazard spreading crown from.	Low	Retain		2.7
434	Cypress (C. pisifera)	43	10	Moderate	2 m above path. Sidewalk 2 m to south, retaining wall 2 m to north. Two stems from below grade. Acute unions mid-crown. Foliage density normal.	Medium	Retain		2.6
435	Buckeye (Aesculus sp.)	28	5	Dead/Dying	Aesculus spp. 85% dead. Heavily decayed throughout.	Dead/Dying	Remove	Due to poor condition. Remove to mitigate Safety risk	2
436	Cypress (C. pisifera)	43	10	Moderate	2 m above path. Sidewalk 2 m to south, retaining wall 2 m to north. Single stem to acute three-way union at 4 m.	Medium	Retain		2.6

Tag #	Species	DBH (cm)	Height (m)	Health and Structure Rating	Comments	Retention Value Rating	Retain/ Remove	Retention/TPZ Comments	TPZ
437	Maple (A. macrophyllum)	21	10	Good	Asphalt and compacted gravel paths 1 m from base on three sides. Stems and crown structure good. Healthy young tree.	High	Retain		2
438	Maple (A. macrophyllum)	30	13	Good	Asphalt and compacted gravel paths 2 m from base on two sides. Stems and crown structure good. Healthy young tree.	High	Retain		2
439	Douglas-fir (P. menziesii)	30	12	Moderate	1 m from path. Minor basal sweep north. Top lost at 10 m.	Medium	Retain		2
440	Cedar (T. plicata)	20	10	Moderate	Moderate basal sweep. Full crown. Foliage thin.	Medium	Retain		2
441	Cedar (T. plicata)	25	10	Good	1 m from asphalt path. Full crown. Stem free from defects. Crown conical. Foliage density moderate.	High	Retain		2
442	Maple (A. macrophyllum)	28	14	Moderate	Strongly asymmetrical rooting to north. Stem grows with 5 degree lean to south. Large crown, structure reasonable.	Medium	Retain		2
443	Maple (A. macrophyllum)	26	14	Moderate	In stand. Three-way fork at 5 m. Narrow crown.	Medium	Retain		2
444	Maple (A. macrophyllum)	35	14	Moderate	Edge tree. Stems growing with lean 5 degrees south. Crown entirely asymmetrical to south over path. Medium sized dead wood in crown.	Medium	Retain	Crown clean, reduce branch end weight.	2.1
445	Cedar (T. plicata)	37	10	Moderate	Two stems from base, 25 and 17 cm DBH. Both with strong basal sweep.	Medium	Retain		2.2
446	Cedar (T. plicata)	32	10	Moderate	Two stems from base, 20 and 12 cm DBH. Both with strong basal sweep.	Medium	Retain		2
447	Douglas-fir (P. menziesii)	20	7	Poor	Suppressed tree with deformed top.	Low	Retain		2
448	Poplar (P. bal. tri)	56	24	Moderate	Dominant tree in group. Stem free from defects. Crown has good structure and form for species.	Medium	Retain		3.4
449	Plum (P. cerasifera)	60	8	Poor	DBH is cumulative estimate. Sprawling steep with multiple stems from grade with defects and decay collapsing under own weight. Most stems at 45 degrees already.	Low	Retain		3.6

Tag #	Species	DBH (cm)	Height (m)	Health and Structure Rating	Comments	Retention Value Rating	Retain/ Remove	Retention/TPZ Comments	TPZ
450	Plum (P. cerasifera)	34	8	Moderate	1.5 m from asphalt path. Unions between main scaffolds branches at 2 m, reasonable for species. Wide spreading crown.	Medium	Retain		2
451	Plum (P. cerasifera)	54	8	Poor	1.5 m from asphalt path. Long columns of included bark from poor unions at 2 m.	Low	Retain		3.2
452	Alder (A. rubra)	27	17	Moderate	Grows codominant pair with 453. Crown asymmetrical to west.	Medium	Retain		2
453	Alder (A. rubra)	32	17	Moderate	Grows codominant pair with 452. Crown asymmetrical to east.	Medium	Retain		2
454	Douglas-fir (P. menziesii)	20	6	Moderate	Suppressed tree, deformed top.	Medium	Retain		2
455	Maple (A. macrophyllum)	65	18	Poor	Dominant tree. Two codominant stems from acute union at base with occluded bark and no fusion of cambium. Other poor unions throughout crown.	Low	Retain		3.9
456	Douglas-fir (P. menziesii)	20	13	Good	Informal path at base. Minor basal sweep. Single stem. Good crown form.	High	Retain		2
457	Cedar (T. plicata)	22	9	Moderate	Tree at corner of stand. Asphalt 2 m from base on two sides. Full crown. Good form. Top 0.5 m is dead.	Medium	Retain		2
458	Hawthorn (Crataegus sp.)	60	7	Poor	Sprawling form. 6 x 10 cm diameter stems.	Low	Retain		3.6
459	Hawthorn (Crataegus sp.)	32	7	Poor	Sprawling form. 4 x 8 cm diameter stems.	Low	Retain		2
460	Hawthorn (Crataegus sp.)	50	7	Poor	Sprawling form. 5 x 10 cm diameter stems.	Low	Retain		3
461	Poplar (P. bal. tri)	62	24	Moderate	Dominant tree. Large surface roots growing with strong asymmetry to west. Single stem free from defects. Wide spreading crown.	Medium	Retain		3.7
462	Poplar (P. bal. tri)	21	16	Moderate	Partly suppressed. Two main structural surface roots. Narrow taper and crown.	Medium	Retain		2
463	Cherry (P. emarginata)	22	12	Poor	Sheltered tree. Extensive cankers at most main branch unions.	Low	Retain		2
464	Maple (A. macrophyllum)	30	15	Moderate	Stems grows with slight lean to east. Crown strongly asymmetrical to east.	Medium	Retain		2

Tag #	Species	DBH (cm)	Height (m)	Health and Structure Rating	Comments	Retention Value Rating	Retain/ Remove	Retention/TPZ Comments	TPZ
465	Maple (A. macrophyllum)	30	15	Moderate	Stems grows with slight lean-to east. Crown strongly asymmetrical to east.	Medium	Retain		2
466	Poplar (P. bal. tri)	46	23	Moderate	Open-grown tree. Free from defects. Crown structure good for species.	Medium	Retain		28
467	Maple (A. macrophyllum)	31	15	Moderate	Crown entirely asymmetrical to west.	Medium	Retain		2
468	Ash (Fraxinus sp.)	30	15	Moderate	1 m from compacted gravel road. Occluding wounds at base. Crown structure good.	Medium	Retain		2
469	Hawthorn (Crataegus sp.)	50	6	Moderate	At edge of asphalt. 5 x 10 cm DBH stems.	Medium	Retain		3
470	Ash (Fraxinus sp.)	29	15	Moderate	1 m from compacted gravel road. 20 x 30 cm patch of dead bark at base. Crown structure good.	Medium	Retain		2
471	Maple (A. macrophyllum)	24	16	Poor	1.5 m from compacted gravel road. Codominant stem previously lost at 4 m, partly occluded. Utility line through crown.	Low	Retain		2
472	Maple (A. macrophyllum)	24	16	Poor	1.5 m from compacted gravel road. In group. Codominant stem with weak union at 2 m.	Low	Retain		2
473	Ash (Fraxinus sp.)	52	15	Good	F. excelsior. Asphalt and compacted gravel road 3 m to east and west. Tree has wide spreading crown with good branch unions. Dripline 8 m.	High	Retain		3.1
474	Ash (Fraxinus sp.)	22	12	Good	At the intersection of two compacted gravel roads. Damaged surface roots. Stem and crown free from defects. Structure good.	High	Retain		2
475	Maple (A. rubrum)	23	12	Moderate	1 m from compacted gravel road. Codominant stem removed at 2 m and occluding.	Medium	Retain		2
476	Ash (Fraxinus sp.)	27	17	Moderate	1 m from gravel road. Stem free from defects. Crown asymmetrical to west.	Medium	Retain		2
477	Ash (Fraxinus sp.)	26	17	Good	1 m from gravel road. Stem free from defects. Crown upright, somewhat narrow.	High	Retain		2
478	Maple (A. rubrum)	23	13	Poor	Partly suppressed. Crown asymmetrical to north. Multiple poor unions in scaffold branches.	Low	Retain		2

Tag #	Species	DBH (cm)	Height (m)	Health and Structure Rating	Comments	Retention Value Rating	Retain/ Remove	Retention/TPZ Comments	TPZ
479	Maple (A. rubrum)	29	13	Moderate	On edge of group, with strongly asymmetrical crown to north west. Three scaffold branches from acute unions with cankers at 2 m.	Medium	Retain		2
480	Maple (A. macrophyllum)	38	14	Good	Moderate basal sweep to west. Three scaffold branches from 3 m, unions moderate to good. Crown wide spreading.	High	Retain		2.3
481	Maple (A. pseudoplatanus)	26	8	Poor	Two codominant stems from poor union at base. Both stems lean 10 degrees west.	Low	Retain		2
482	Horsechestnut (A. hippocastanum)	88	20	Poor	Large dominant tree. Two main stems from acute union at 2 m, with evidence for cracking down seam on north side. Wear marks on crossing branches that no-longer match suggests east stem has already moved.	Low	Remove	Due to poor condition. Remove to mitigate Safety risk	5.3
483	Maple (A. macrophyllum)	24	12	Moderate	1.5 m from compacted gravel road. Surface roots to west. Three-way fork at 2 m, unions good. Crown asymmetrical to east.	Medium	Retain		2
484	Alder (A. rubra)	25	14	Moderate	Crown asymmetrical to east.	Medium	Retain		2
485	Maple (A. macrophyllum)	32	14	Moderate	Small seam with fluid flux at 2.5 m. Weak unions in crown.	Medium	Retain		2
486	Hawthorn (Crataegus sp.)	30	8	Poor	Clump of three trees.	Low	Retain		2
487	Alder (A. rubra)	25	13	Poor	Raised buttress roots to west. Grows with 10 degree lean to east. Crown asymmetrical to east.	Low	Retain		2
488	Alder (A. rubra)	29	13	Moderate	Vertical stem, minor kink. Crown slightly asymmetrical to west.	Medium	Retain		2
489	Buckeye (Aesculus sp.)	46	16	Good	Aesculus spp. Dominant tree in group. Not structurally dependant on 482. Scaffold branch unions are good.	High	Retain		2.8
490	Oak (Q. palustris)	34	17	Good	Dominant tree. Acute scaffold branch union at 4 m appears good. Two scaffold branches upright. Symmetrical crown.	High	Retain		2

Tag #	Species	DBH (cm)	Height (m)	Health and Structure Rating	Comments	Retention Value Rating	Retain/Remove	Retention/TPZ Comments	TPZ
491	Maple (A. palmatum)	20	6	Poor	4 x 8 cm stems from acute unions at base.	Low	Retain		2
492	Dogwood (C. nuttallii)	23	7	Moderate	Growing beneath utility wires. 0.7 m from utility pole. Two stems from 0.5 m, 15 and 8 cm DBH.	Medium	Retain		2
493	Maple (A. palmatum)	37	6	Moderate	Growing beneath utility wires. 1 m from concrete chamber. Two stems from acute union at 0.5 m, 17 and 20 cm DBH.	Medium	Retain		2.2
494	Dogwood (C. florida)	22	4	Poor	Growing beneath utility wires. 0.8 m from curb, 1 m from concrete chamber. Two stems from 0.5 m, 12 and 10 cm DBH.	Low	Retain		2
495	Spindlewood (Euonymus sp.)	24	5	Poor	Euonymus spp. Beneath and in contact with utility wires. Two equal stems from poor union at 0.5 m. Decay in stems.	Low	Retain		2
496	Cedar (T. occidentalis)	29	8	Poor	Two stems from acute union at 0.5 m. Columnar crown with minor branches bending out.	Low	Retain		2
497	Maple (A. macrophyllum)	31	13	Poor	Three scaffold branches from acute union with included bark at 1.5 m. Crown asymmetrical to south east.	Low	Retain		2
498	Alder (A. rubra)	33	15	Moderate	Compacted gravel path at base on south side. Minor surface roots. Single straight stem. Crown symmetrical.	Medium	Retain		2
499	Maple (A. macrophyllum)	38	16	Moderate	Dominant tree at edge of group. Three main scaffold branches from poor to moderate acute unions at 3 m. Crown asymmetrical to south.	Medium	Retain		2.3
500	Alder (A. rubra)	36	22	Moderate	Dominant tree at edge of group. 4 m from path and bridge to west. Stems grows at 5 degrees to west. Crown heavy, asymmetrical to west. Small diameter dead wood in lower crown to east.	Medium	Retain		2.2
501	Alder (A. rubra)	37	22	Moderate	Dominant tree at edge of group. 6 m from bridge to west. Growing with 5 degree lean north west. Crown heavy, asymmetrical to	Medium	Retain		2.2

Tag #	Species	DBH (cm)	Height (m)	Health and Structure Rating	Comments	Retention Value Rating	Retain/ Remove	Retention/TPZ Comments	TPZ
					north west. Small diameter dead wood in lower crown to south.				
502	Alder (A. rubra)	41	22	Poor	Tree in centre of group. Utility wires 12 m east. Lower trunk grows ~8 degrees east. Straightens from 10 m. Appears to have lost top at 10 m and regrown, seam below, possible decay.	Low	Retain		2.5
503	Alder (A. rubra)	45	22	Poor	Large tree at edge of group. 7 m from high voltage utility wires. Grows with 5 degree lean to east. Top lost at 13 m and reiterated. Crown over utility wires.	Low	Retain	Prune for utility line clearance	2.7
504	Alder (A. rubra)	28	22	Poor	Subdominant tree at edge of group. Stem has minor curve to south. Crown asymmetrical to south.	Low	Retain		2
505	Alder (A. rubra)	32	22	Poor	Subdominant tree at edge of group. Stem grows with 5 degree lean to south east. Crown completely asymmetrical to south east. High voltage wires at dripline to south east.	Low	Retain	Prune for utility line clearance	2
506	Maple (Acer sp.)	37	13	Moderate	Partly suppressed on north side of alder group. 2.5 m from edge of pond. Three scaffold branches from moderate unions at 2 m. Wide spreading crown.	Medium	Retain		2.2
507	Maple (A. macrophyllum)	25	13	Moderate	1 m from gravel path to west. Minor basal sweep. Form upright. Branch unions good.	Medium	Retain		2
508	Maple (A. macrophyllum)	56	13	Poor	High voltage utility wires 6 m to east. Two stems from acute union with included bark at 0.7 m. Crown trimmed for utility wire clearance, hazard removed.	Low	Retain		3.4
509	Maple (A. macrophyllum)	56	13	Moderate	High voltage utility wires 6 m to east. Four scaffold branches from acute unions with moderate included bark at 2.5 m. One could impact wires if failed. Crown has upright form.	Medium	Retain		3.4

Tag #	Species	DBH (cm)	Height (m)	Health and Structure Rating	Comments	Retention Value Rating	Retain/ Remove	Retention/TPZ Comments	TPZ
510	Maple (A. palmatum)	22	5	Poor	Decay at base. Two stems from poor acute union at 1 m. Topped.	Low	Retain		2
511	Spruce (P. sitchensis)	29	12	Good	2.5 m from high voltage utility wires. Crown removed to west. Otherwise stems is free from defects and tree healthy. Full crown.	High	Retain		2
512	Maple (A. macrophyllum)	21	12	Moderate	Gravel path at base. Upright form. Crown trimmed to east for utility wire clearance.	Medium	Retain		2
513	Tulip tree (L. tulipifera)	41	15	Moderate	Compacted gravel play at base. Minor root collar damage possible. Moderate kink at 6 m. Crown rounded, symmetrical.	Medium	Retain		2.5
514	Willow (S. babylonica)	30	8	Poor	Leans 10 degrees over pond. Concrete retaining wall 1 m from base. Large scaffold branch removed at 3 m.	Low	Retain		2
515	Pine (P. sylvestris)	37	13	Moderate	In loose group. Minor kink at 6 m. Crown asymmetrical to west. Flat top. Foliage healthy.	Medium	Retain		2.2
516	Pine (P. sylvestris)	35	13	Poor	In loose group. 1/3 of crown lost to east from branch failure. Crown asymmetrical to west.	Low	Retain		2.1
517	Pine (P. sylvestris)	51	16	Moderate	In loose group. Two large scaffold branches from good union at 4 m. Crown straggly. Minor branch loss. Foliage healthy.	Medium	Retain		3.1
518	Maple (A. macrophyllum)	37	14	Moderate	Compacted gravel path at base to south. Two stems from acute union with minor included bark at 2 m. Any failure would occur to north. Crown rounded.	Medium	Retain		2.2
519	Cedar (T. plicata)	31	14	Excellent	Growing at edge of lawn. 6 m from high voltage utility wires. Single stem, no defects. Crown full, conical form, vigorous, healthy. Perfect young cedar tree.	Excellent	Retain		2
520	Cedar (T. plicata)	27	7	Poor	Topped for utility wire clearance.	Low	Retain		2
521	Linden (Tilia sp.)	27	12	Moderate	In grass. 4 m from high voltage utility wires. Trimmed for clearance, crown deformed.	Medium	Retain		2
522	Maple (A. macrophyllum)	20	11	Moderate	Partly suppressed on edge of stand. Crown asymmetrical to south.	Medium	Retain		2

Tag #	Species	DBH (cm)	Height (m)	Health and Structure Rating	Comments	Retention Value Rating	Retain/ Remove	Retention/TPZ Comments	TPZ
523	Douglas-fir (<i>P. menziesii</i>)	28	18	Good	Emergent tree in small stand. Root collar and buttress roots above grade. Single stem, no defect. Crown has good form, foliage healthy.	High	Retain		2
524	Maple (<i>A. macrophyllum</i>)	26	16	Moderate	In small stand. Stem base leans 5 degrees south. Two upright main trunks from good u-shaped union at 2 m.	Medium	Retain		2
525	Maple (<i>A. macrophyllum</i>)	35	16	Moderate	Edge of small stand over pond. Two upright main trunks from good, slightly acute union at 2 m. Crown asymmetrical to west.	Medium	Retain		2.1
526	Maple (<i>A. macrophyllum</i>)	35	16	Moderate	Edge of small stand. Three main upright stems from acute unions at base, 20, 20 and 14 cm DBH.	Medium	Retain		2.1
527	Maple (<i>A. macrophyllum</i>)	32	15	Dead/Dying	Completely dead.	Dead/Dying	Remove	Reduce to 6 m stump.	2
528	Linden (<i>Tilia sp.</i>)	33	18	Good	At north edge of group. Main branch unions all appear moderate to good. Crown has rounded symmetrical form.	High	Retain		2
529	Douglas-fir (<i>P. menziesii</i>)	29	18	Good	In small stand. Surface roots. Single stem, no defects. High crown, symmetrical. Healthy.	High	Retain		2
530	Douglas-fir (<i>P. menziesii</i>)	29	18	Good	Edge tree. High voltage utility wires 3 m to east. Surface roots. Single stem, no defects. Crown asymmetrical to east, healthy.	High	Retain		2
531	Douglas-fir (<i>P. menziesii</i>)	29	18	Good	Edge tree. High voltage utility wires 3 m to east. Surface roots. Single stem, no structural defects, girdling string occluded at 1.5 m. Crown asymmetrical to east, healthy.	High	Retain		2
532	Redwood (<i>S. giganteum</i>)	108	19	Moderate	End tree in row of same species. Top lost at 17 m. Crown raised to 2 m, rounded top. Christmas lights in lower crown.	Medium	Retain	Adjust lights and wires yearly to minimize, chance of gridling damage to limbs or trunk.	6.5

Tag #	Species	DBH (cm)	Height (m)	Health and Structure Rating	Comments	Retention Value Rating	Retain/ Remove	Retention/TPZ Comments	TPZ
533	Redwood (<i>S. giganteum</i>)	101	19	Moderate	In row of same species. Top lost at 17 m. Crown raised to 2 m, rounded top. Christmas lights in lower crown, starting to girdle trunk.	Medium	Retain	Adjust lights and wires yearly to minimize, chance of gridling damage to limbs or trunk.	6.1
534	Redwood (<i>S. giganteum</i>)	101	20	Moderate	In row of same species. Top lost at 19 m. Crown raised to 2 m, rounded top. Christmas lights in lower crown.	Medium	Retain	Adjust lights and wires yearly to minimize, chance of gridling damage to limbs or trunk.	6.1
535	Redwood (<i>S. giganteum</i>)	98	23	Good	In row of same species. Top intact. Crown raised to 2 m, conical form. Christmas lights in lower crown.	High	Retain	Adjust lights and wires yearly to minimize, chance of gridling damage to limbs or trunk.	5.9
536	Redwood (<i>S. giganteum</i>)	94	18	Moderate	In row of same species. Top dead at 17 m. Crown raised to 2 m. Christmas lights in lower crown.	Medium	Retain	Adjust lights and wires yearly to minimize, chance of gridling damage to limbs or trunk.	5.6
537	Redwood (<i>S. giganteum</i>)	82	21	Good	In row of same species. Top intact. Crown raised to 2 m, conical form. Christmas lights in lower crown.	High	Retain	Adjust lights and wires yearly to minimize, chance of gridling damage to limbs or trunk.	4.9
538	Redwood (<i>S. giganteum</i>)	78	21	Good	End tree in row of same species. Top intact. Crown raised to 2 m, conical form.	High	Retain		4.7
539	Redwood (<i>S. giganteum</i>)	68	23	Good	End tree in row of same species. Top intact. Crown raised to 2 m, conical form.	High	Retain		4.1
540	Poplar (<i>P. nigra</i>)	104	31	Moderate	1.5 m from asphalt road. Appears to have surface root in grass leading to drain 18.2 m south. Crown asymmetrical to east, wide spreading for species. Three upright scaffold branches from 8 m, unions appear good for species. No dieback or branch loss.	Medium	Retain		6.2

Tag #	Species	DBH (cm)	Height (m)	Health and Structure Rating	Comments	Retention Value Rating	Retain/ Remove	Retention/TPZ Comments	TPZ
541	Locust (G. triacanthos)	32	10	Poor	3 m from asphalt path. Poorly planted above grade. Leans 2 degrees to west. Main structural union is wide u-shaped with in-rolled seam, appears weak. Crown wide spreading.	Low	Retain	Reduce branch end endweight/length by one third	2
542	Pine (P. sylvestris)	39	15	Moderate	At edge of row. Roots heaving asphalt 2 m west. Grows with 4-5 degree lean to west. Single stem. Crown heavily asymmetrical to west. Utility wires 1 m to east. Healthy.	Medium	Retain		2.3
543	Oak (Q. coccinea)	51	16	Moderate	2 m from curb and asphalt to east. Crown from 6 m. Branches dense, structure messy, unions appear moderate or good. Rounded crown from.	Medium	Retain		3.1
544	Maple (A. palmatum)	35	7	Poor	In planted bed. Two stems from acute union at base, 23 cm and 12 cm DBH. One stem heavily decayed at base. Stems cross.	Low	Retain		2.1
545	Maple (A. palmatum)	23	6	Moderate	In planted bed. 0.7 m from paved path. Multiple stems from acute union at base.	Medium	Retain		2
546	Maple (A. palmatum)	31	5	Poor	In planted bed. Three equal stems from acute unions at base. Extensive twig dieback in crown.	Low	Retain		2
547	Beech (F. sylvatica)	41	12	Moderate	In planted bed, 1 m from paved path. Two scaffold branches from acute union at 2 m with minor to moderate included bark. Other structural unions good. Crown rounded.	Medium	Retain		2.5
548	Maple (A. palmatum)	31	7	Poor	In planted bed. Partly suppressed. Two stems from acute union at base, 18 cm and 12 cm DBH. One stem decayed at base.	Low	Retain		2
549	Linden (Tilia sp.)	25	10	Moderate	In planting bed. Curbs and asphalt 2 to 3 m on three sides. Main union at 6 m is wide, appears sound. Rounded crown.	Medium	Retain		2

Tag #	Species	DBH (cm)	Height (m)	Health and Structure Rating	Comments	Retention Value Rating	Retain/Remove	Retention/TPZ Comments	TPZ
550	Poplar (Populus sp.)	76	24	Poor	In grass. Water valve inspection cover at base. Extensive cankers with decay at root collar and in lower trunk. Main branch unions good for species. Minor branch dieback throughout crown. Crown asymmetrical to east.	Low	Remove	To mitigate safety Risk to site.	4.6
551	Poplar (Populus sp.)	74	24	Poor	In grass. Exposed surface roots damaged by mower. Moderate cankers with decay in lower trunk. Main branch unions good for species. Minor branch dieback throughout crown. Crown asymmetrical to east.	Low	Remove	To mitigate safety Risk to site.	4.4
552	Poplar (P. nigra)	86	33	Poor	In grass. Extensive cankers in lower trunk on tension side. Whole tree leans 2-3 degrees east, not clear is due to growth or failure. Crown structure columnar, unions poor to moderate.	Low	Remove	To mitigate safety Risk to site.	5.2
553	Poplar (P. tremuloides)	21	12	Moderate	Young healthy tree at edge of small group. 3.5 m from high voltage utility wires.	Medium	Retain		2
554	Poplar (P. tremuloides)	21	12	Moderate	Young healthy tree at edge of small group. 3.5 m from high voltage utility wires.	Medium	Retain		2
555	Pine (P. sylvestris)	63	13	Moderate	Two stems from acute union at base, 35 and 28 cm DBH. both stems grow with moderate curve to west. Crown asymmetrical to west, flat topped.	Medium	Retain		3.8
556	Pine (P. sylvestris)	38	14	Moderate	Single stem to top, moderately sinuous. Crown asymmetrical to east.	Medium	Retain		2.3
557	Poplar (P. tremuloides)	31	19	Moderate	3 m from high voltage utility wires. Crown trimmed for clearance, good pruning cuts at trunk. Single stem to top, no defects.	Medium	Retain		2
558	Poplar (P. tremuloides)	21	10	Poor	In grass between sheds 3 m north and east. Codominant stem removed at base, decayed. Crown asymmetrical to east. Cluster of communication wires through crown.	Low	Remove	Remove to mitigate Safety risk	2

Tag #	Species	DBH (cm)	Height (m)	Health and Structure Rating	Comments	Retention Value Rating	Retain/ Remove	Retention/TPZ Comments	TPZ
559	Maple (A. saccharinum)	66	25	Moderate	4 m from curb and 6 m to electrical building to north. Main scaffold branches have good unions at 4 m, but branches are overextended, typical for species. Crown heavily asymmetrical to north.	Medium	Retain	Prune to reduce end weighted stems, note this tree should be removed if area is renovated.	4
560	Linden (Tilia sp.)	25	10	Moderate	In strip of grass, 0.5 m from asphalt. Main union at 5 m is wide, appears sound. Rounded crown.	Medium	Retain		2
561	Willow (Salix sp.)	30	8	Poor	At edge of pond. Multiple defects in trunk.	Low	Retain		2
562	Tulip tree (L. tulipifera)	49	20	Poor	On grassy mound. High voltage utility wires 4 m to north. Entire north side of crown removed. Stems leans 5 degrees to south.	Low	Retain		2.9
563	Tulip tree (L. tulipifera)	62	20	Poor	On grassy mound. Three stems from acute unions with extensive included bark and some decay present. Crown asymmetrical to south.	Low	Retain	Prune to reduce end weighted stems, note this tree should be removed if area is renovated.	3.7
564	Spruce (P. sitchensis)	24	10	Good	At edge of group. Surface roots. Young healthy tree.	High	Retain		2
565	Spruce (P. sitchensis)	26	10	Good	At edge of group. Surface roots. Young healthy tree.	High	Retain		2
566	Cedar (T. plicata)	25	10	Good	At edge of group. Young healthy tree.	High	Retain		2
567	Cedar (T. plicata)	32	10	Good	Dominant tree in group. Conical crown. Healthy.	High	Retain		2
568	Poplar (P. bal. tri)	34	26	Good	On top of small bank. Surface roots. Single stem to top, no defects.	High	Retain		2
569	Tulip tree (L. tulipifera)	40	18	Moderate	Top of small grassy bank. Three main scaffold branches from 6 m, unions appear good. Crown asymmetrical to south.	Medium	Retain		2.4
570	Alder (A. rubra)	20	16	Poor	On grassy bank. 6 m from high voltage utility wires.	Low	Remove	Remove to mitigate Safety risk	2

Tag #	Species	DBH (cm)	Height (m)	Health and Structure Rating	Comments	Retention Value Rating	Retain/ Remove	Retention/TPZ Comments	TPZ
571	Alder (A. rubra)	25	16	Poor	On grassy bank. 8 m from high voltage utility wires. Asymmetrical rooting, minor damage to buttresses. Crown asymmetrical to north west.	Low	Remove	Remove to mitigate Safety risk	2
572	Alder (A. rubra)	21	10	Poor	In grass moderate wound with decay at base.	Low	Remove	Remove to mitigate Safety risk	2
573	Pine (P. sylvestris)	55	13	Moderate	Curb 2 m west, retaining wall 3 m east. Five scaffold branches from lower crown. Structural branch unions moderate to good. Minor branch loss from crown. Straggly rounded form. Foliage healthy.	Medium	Retain		3.3
574	Pine (P. sylvestris)	66	13	Poor	Curb 3 m west, retaining wall 1.5 m east. Two stems from below grade, 43 and 23 cm DBH, likely no union. Small stem leans 20 degrees north, overextended heavily, no target at present during assessment; however high use area during fair times. Large stem overextended to west, large occluding wound at 5 m.	Low	Retain	Prune to reduce end weighted stems, note this tree should be removed if area is renovated.	4
575	Oak (Q. robur)	26	12	Moderate	Growing in corner, 0.6 m from retaining wall and building. No major defects. Crown rounded, straggly.	Medium	Retain		2
576	Maple (A. rubrum)	33	15	Good	On 25-degree slope. Three scaffold branches from lower crown, unions good. Crown form rounded.	High	Retain		2
577	Maple (A. rubrum)	59	15	Poor	On 25-degree slope. Retain wall 2 m west at top of slope. Possible partial root failure, corrected. Four scaffold branches from acute unions with included bark in lower crown. Crown form rounded.	Low	Retain	Reduce branch end endweight/length to east by one third	3.5
578	Oak (Q. rubra)	58	15	Moderate	On 20-degree slope. Retain wall 2.5 m upslope to west. Three large overextended scaffold branches from wide unions at 3 m. Crown diameter 20 m.	Medium	Retain		3.5
579	Pine (P. sylvestris)	29	4	Moderate	1.2 m from curb to north. Suppressed tree, flat top.	Medium	Retain		2

Tag #	Species	DBH (cm)	Height (m)	Health and Structure Rating	Comments	Retention Value Rating	Retain/ Remove	Retention/TPZ Comments	TPZ
580	Oak (Q. rubra)	81	16	Moderate	2.5 m from curb to north, roots heaving asphalt, moderate. Three large overextended scaffold branches from 2.5 m, one union has included bark. 18 m crown diameter.	Medium	Retain		4.9
581	Cherry (P. serrulata)	50	6	Poor	Poor unions, decay columns likely from large stubs.	Low	Retain		3
582	Cherry (P. serrulata)	30	6	Poor	Partly suppressed, topped. Poor unions, decay columns likely from large stubs.	Low	Retain		2
583	Oak (Q. rubra)	71	18	Moderate	5 m from curb. Single dominant stem, lateral branches overextended but unions good. Large pruning wounds on Lowe trunk mostly occluded. Crown diameter 20 m.	Medium	Retain		4.3
584	Tulip tree (L. tulipifera)	56	16	Moderate	In grass strip, curb 3 m to south, retaining wall 2.5 m north. Stem has multiple pruning wounds. Top lost with decayed stub at 9 m. Crown from lateral branches, unions good.	Medium	Retain		3.4
585	Tulip tree (L. tulipifera)	56	16	Moderate	In grass strip, curb 3 m to south, retaining wall 2.5 m north. Stem has multiple pruning wounds, one weeping at base. Two main arching scaffold branches from 8 m, union appears good.	Medium	Retain		3.4
586	Tulip tree (L. tulipifera)	56	16	Moderate	In grass strip, curb 3 m to south, retaining wall 2.5 m north. Three upright scaffold branches from wide union at 4 m, two 10 cm wounds with decay columns in union.	Medium	Retain		3.4
587	Tulip tree (L. tulipifera)	56	16	Moderate	In grass strip, curb 3 m to south, retaining wall 2.5 south. Hydrant 1.5 m from base. Single main stem, many occluded pruning wounds in lower 4 m.	Medium	Retain		3.4
588	Cedar (T. plicata)	56	15	Moderate	Retaining wall at 1.5 m on three sides. Single stem to top, no defects. Conical crown. Outer foliage yellowish, May be golden variety.	Medium	Retain		3.4

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589	Tulip tree (L. tulipifera)	54	16	Moderate	In grass strip, curb 1.5 m to south, retaining wall 1.5 north. Concrete chamber 1.5 m from base. Single main stem, many occluded pruning wounds in lower 4 m.	Medium	Retain		3.2
590	Tulip tree (L. tulipifera)	54	16	Poor	In grass strip, curb 1 m to south, retaining wall 1 north. Concrete Single main stem, many partly occluded pruning wounds. Most branches removed, three branches left at top.	Low	Retain	This tree appears to be over pruned and may require removal if adjacent wall is removed.	3.2
591	Cedar (T. plicata)	48	15	Moderate	Retaining wall at 1 m on three sides. Light pole 1 m from base. Single stem to top, no defects. Conical crown. Outer foliage yellowish, may be variety. Top slightly thin.	Medium	Retain		2.9
592	Oak (Q. rubra)	81	21	Moderate	In 3 m x 3 m planting inset. No asphalt heaving. Stem grows with lean 5 degrees south. Crown from large structural branches arising at 7 m, unions moderate to good. Branches overextended as typical for species. Dripline radius 12 m.	Medium	Retain		4.9
593	Oak (Q. rubra)	75	21	Moderate	In 3 m x 3 m planting inset. No asphalt heaving. Stem grows with lean 5 degrees south. Crown from two large scaffold branches arising at 4 m, union good. Branches overextended as typical for species. Crown asymmetrical to south. Dripline radius 12 m.	Medium	Retain		4.5
594	Oak (Q. rubra)	59	21	Good	In 1 m x 2 m planting inset. No asphalt heaving. Stem grows with lean 5 degrees south. Crown has central stem with laterals, good form and structure. Branches overextended as typical for species. Dripline radius 10 m.	High	Retain		3.5
595	Oak (Q. rubra)	75	21	Moderate	In 2.5 m x 3 m planting inset. No asphalt heaving. Stem grows with lean 5 degrees south. Crown from large structural branches arising at 5 m, unions moderate to good.	Medium	Retain		4.5

Tag #	Species	DBH (cm)	Height (m)	Health and Structure Rating	Comments	Retention Value Rating	Retain/ Remove	Retention/TPZ Comments	TPZ
					Branches overextended as typical for species. Dripline radius 12 m.				
596	Maple (A. palmatum)	33	5	Moderate	On bank, 2 m from light pole. Three stems from acute unions at base, 15, 8 and 10 cm DBH.	Medium	Retain		2
597	Maple (A. palmatum)	29	5	Moderate	On bank, 1 m from asphalt. Three stems from acute unions at base, 13, 10 and 16 cm DBH. One stems with decay column.	Medium	Retain		2
598	Maple (A. palmatum)	20	5	Moderate	At top of bank, 0.5 m from asphalt. Two stems from acute union at base, 12 and 8 cm DBH.	Medium	Retain		2
599	Maple (A. palmatum)	29	5	Moderate	On bank, 1 m from utility pole. Two stems from acute union at base, 13 and 16 cm DBH.	Medium	Retain		2
Row01	Poplar (P. nigra)	60	27	Moderate	Row of 14 trees. 50 to 75 cm DBH. 24 to 28 m tall. 1.5 m from fence. 10 m from horse stables. Evidence for minor branch shedding from crown, no moderate or major failures. Range of weak unions throughout, typical of species. None seen to be probable of imminent probability of failure.	Medium	Retain		3.6
Row02	Cedar (T. plicata)	60	25	Moderate	Row of 7 trees. 60 to 85 cm DBH. 22 to 26 m tall. 2 m from asphalt parking lot. Three have large, acute unions at base, but none seem to be probably of imminent probability of failure. Crowns full, conical. Foliage healthy throughout.	Medium	Retain		3.6
Row03	Poplar (P. nigra)	60	27	Moderate	Row of 35 trees. 30 to 95 cm DBH. 24 to 28 m tall. 1.5 m from horse stables. Evidence for minor branch shedding from crown, no moderate or major failures. Range of weak unions throughout, typical of species. Crowns all asymmetrical to west. None seen	Medium	Retain	These trees should only be retained if the direct land-use in passive. In addition crown clean pruning is recommended.	3.6

Tag #	Species	DBH (cm)	Height (m)	Health and Structure Rating	Comments	Retention Value Rating	Retain/ Remove	Retention/TPZ Comments	TPZ
					to be probable of imminent probability of failure.				
Row04	Cedar (<i>T. plicata</i>)	60	25	Poor	Row of 30 trees. 60 to 85 cm DBH. 22 to 26 m tall. Recent (last few years) gravel path running 1 m from base under crowns. Southern 20 trees vary in health between completely dead and moribund with thin tops. 6 of 10 northern trees moderate health. None seem to be probably of imminent probability of failure.	Low	Remove	Remove southernmost 20 trees and replant. Removal of these trees will need to be done under arborist supervision, and remaining trees to be assessed for windfirmness after. In addition the adjacent Poplar trees may be reliant on these trees and will need to be re-assessed.	3.6
Row05	Cherry (<i>P. serrulata</i>)	20	5	Poor	11 trees in row between asphalt and concrete 1 m north and south. Several with advance decay at base. Several Crowns poor and dying back.	Low	Retain		2
Row06	Cedrus (<i>C. atlantica</i>)	20	3	Poor	Row of four trees, 2 bylaw sized. All topped at 1.5 m. Weeping form.	Low	Retain		2
Row07	Cedar (<i>T. plicata</i>)	15	10	Moderate	Approx. 50 stems as hedge around ride. Full crown and healthy.	Medium	Retain		2
Row08	Yew (<i>T. baccate</i>)	20	5	Moderate	15 yew trees and 1 similar sized dogwood in row. Loosely clipped to size and form.	Medium	Retain		2
Row09	Douglas-fir (<i>P. menziesii</i>)	25	15	Good	18 trees in row. 15 to 30 cm DBH. 12 to 15 m high. All single stemmed. Crowns raised to 3 m. Utility wires through crowns on west side.	High	Retain		2

Tag #	Species	DBH (cm)	Height (m)	Health and Structure Rating	Comments	Retention Value Rating	Retain/ Remove	Retention/TPZ Comments	TPZ
Row10	Douglas-fir (<i>P. menziesii</i>)	25	16	Moderate	14 trees in row. In 3 m wide planting strip between curbs and asphalt. 18 to 30 cm DBH. Stems all single to top. Crowns raised to 3 m, healthy.	Medium	Retain		2
Row11	Poplar (<i>P. nigra</i>)	32	14	Poor	Row of 6 moribund trees. In 1.5 m wide inset in asphalt with compacted gravel. 32 to 42 DBH. 12-14 m ht. All have moderate to extensive basal decay. Crowns all asymmetrical to east. Remove.	Low	Remove	Remove before ASAP next amphitheatre use	2
Row12	Hornbeam (<i>C. betulus</i>)	40	14	Poor	Four trees in row. Planted in raised stone bed 1.5 m wide, 0.6 m high. All have multiple stems from acute unions with large wounds and basal decay.	Low	Remove	Trees have outgrown growing space, condition is not suitable for retention.	2.4
Stand01	Douglas-fir (<i>P. menziesii</i>)	30	15	Moderate	Stand of 9 Douglas-firs (20-40 cm DBH, 12-18 m Ht) and 15 cedars (15-35 cm DBH, 10-15 m Ht). Firs generally good, cedars generally moderate.	Medium	Retain		2

Appendix 2 Site Photographs

Please note due to the high volume of trees we have provided just a few pictures for context and our photo files are available upon request.



Photo 1. Row 12 Decay on main trunks.



Photo 2.Tree # 584



Photo 3. Showing group of pines including tree # 257

Appendix 3 Tree Health and Structure Rating Criteria

The tree health and structure ratings used by Diamond Head Consulting summarize each tree based on both positive and negative attributes using five stratified categories. These ratings indicate health and structural conditions that influence a tree's ability to withstand local site disturbance during the construction process (assuming appropriate tree protection) and benefit a future urban landscape.

Excellent: Tree of possible specimen quality, unique species or size with no discernible defects.

Good: Tree has no significant structural defects or health concerns, considering its growing environment and species.

Moderate: Tree has noted health and/or minor to moderate structural defects. This tree can be retained, but may need mitigation (e.g., pruning or bracing) and monitoring post-development. A moderate tree may be suitable for retention within a stand or group, but not suitable on its own.

Poor: Tree is in serious decline from previous growth habit or stature, has multiple defined health or structural weaknesses. It is unlikely to acclimate to future site use change. This tree is not suitable for retention within striking distance of most targets.

Dying/Dead: Tree is in severe decline, has severe defects or was found to be dead.

Appendix 4 Tree Retention Value Rating Criteria

The tree retention value ratings used by Diamond Head Consulting provide guidance for tree retention planning. Each tree in an inventory is assigned to one of four stratified categories that reflect its value as a future amenity and environmental asset in a developed landscape. Tree retention value ratings take in to account the health and structure rating, species profile*, growing conditions and potential longevity assuming a tree's growing environment is not compromised from its current state.

High: Tree suitable for retention. Has a good or excellent health and structure rating. Tree is open grown, an anchor tree on the edge of a stand or dominant within a stand or group. Species of *Populus*, *Alnus* and *Betula* are excluded from this category.

Medium: Tree suitable for retention with some caveats or suitable within a group**. Tree has moderate health and structure rating, but is likely to require remedial work to mitigate minor health or structural defects. Includes trees that are recently exposed, but wind firm, and trees grown on sites with poor rooting environments that may be ameliorated.

Low: Tree has marginal suitability for retention. Health and structure rating is moderate or poor; remedial work is unlikely to be viable. Trees within striking distance of a future site developments should be removed.

Nil: Tree is unsuitable for retention. It has a dying/dead or poor health and structure rating. It is likely that the tree will not survive, or it poses an unacceptable hazard in the context of future site developments.

* The species profile is based upon mature age and height/spread of the species, adaptability to land use changes and tree species susceptibility to diseases, pathogen and insect infestation.

** Trees that are 'suitable as a group' have grown in groups or stands that have a single, closed canopy. They have not developed the necessary trunk taper, branch and root structure that would allow them to be retained individually. These trees should only be retained in groups.

Appendix 5 Risk Rating Matrices

Trees with a *probable* or *imminent* likelihood of failure, a *medium* or *high* likelihood of impacting a specified target, and a *significant* or *severe* consequence of failure have been assessed for risk and included in this report (Section 3.2). These two risk rating matrices showing the categories used to assign risk are taken without modification to their content from the International Society of Arboriculture Tree Risk Assessment Qualification Manual.

Matrix 1: Likelihood

Likelihood of Failure	Likelihood of Impacting Target			
	Very Low	Low	Medium	High
Imminent	Unlikely	Somewhat Likely	Likely	Very Likely
Probable	Unlikely	Unlikely	Somewhat Likely	Likely
Possible	Unlikely	Unlikely	Unlikely	Somewhat Likely
Improbable	Unlikely	Unlikely	Unlikely	Unlikely

Matrix 2: Risk Rating

Likelihood of Failure and Impact	Consequences of Failure			
	Negligible	Minor	Significant	Severe
Very Likely	Low	Moderate	High	Extreme
Likely	Low	Moderate	High	High
Somewhat Likely	Low	Low	Moderate	Moderate
Unlikely	Low	Low	Low	Low

Appendix 6 Construction Guidelines

Tree management recommendations in this report are made under the expectation that the following guidelines for risk mitigation and proper tree protection will be adhered to during construction.

Respecting these guidelines will prevent changes to the soil and rooting conditions, contamination due to spills and waste, or physical wounding of the trees. Any plans for construction work and activities that deviate from or contradict these guidelines should be discussed with the project arborist so that mitigation measures can be implemented.

Tree Protection Zones

A Tree protection zone (TPZ) is determined using either dripline or a DBH multiplier to define a radius measured in all directions from the outside of a tree's trunk. It is typically determined according to local municipal bylaw specifications and may be modified based on professional judgement of the project arborist to accommodate species specific tolerances and site specific growing conditions. For retained trees, the TPZ and fencing indicated in this report are proposed as suitable in relation to the level of disturbance proposed on the site plan provided to the project arborist. Arborist consultation is required if any additional work beyond the scope of the plans provided is proposed near the tree. Work done in addition to the proposed impacts discussed in this report may cause the tree to decline and die.

Tree Protection Fencing: Tree protection zones (TPZs) will be protected by Tree Protection Fencing except where site features constrict roots (e.g., retaining walls or roads), where continual access is required (e.g., sidewalks), or when an acceptable encroachment into the TPZ is proposed, in which case the fencing will be modified. Tree Protection Fencing is shown on the Tree Protection Plan and, where it varies from the TPZ, the rationale is described in the inventory table in Section 3.1.

Within a TPZ, no construction activity, including materials storage, grading or landscaping, may occur without project arborist approval. Within the TPZ, the following are tree preservation guidelines based on industry standards for best practice and local municipal requirements:

- No soil disturbance or stripping.
- Maintain the natural grade.
- No storage, dumping of materials, parking, underground utilities or fires within TPZs or tree driplines.
- Any planned construction and landscaping activities affecting trees should be reviewed and approved by a consulting arborist.
- Install specially designed foundations and paving when these structures are required within TPZs.
- Route utilities around TPZs.
- Excavation within the TPZs should be supervised by a consultant arborist.
- Surface drainage should not be altered in such a way that water is directed in or out of the TPZ.

- Site drainage improvements should be designed to maintain the natural water table levels within the TPZ.

Prior to any construction activity, Tree Protection Fencing must be constructed as shown on the Tree Protection Plan. The protection barrier or temporary fencing must be at least 1.2 m in height and constructed of 2" by 4" lumber with orange plastic mesh screening. Tree Protection Fencing must be constructed prior to tree removal, excavation or construction and remain intact for the entire duration of construction.

Tree Crown Protection and Pruning

All heavy machinery (excavators, cranes, dump trucks, etc.) working within five meters of a tree's crown should be made aware of their proximity to the tree. If there is to be a sustained period of machinery working within five meters of a tree's crown, a line of colored flags should be suspended at eye-level of the machinery operator for the length of the protected tree area. Any concerns regarding the clearance required for machinery and workers within or immediately outside tree protection zones should be referred to the project arborist so that a zone surrounding the crowns can be established or pruning measures undertaken. Any wounds incurred to protected trees during construction should be reported to the project arborist immediately.

Unsurveyed Trees

Unsurveyed trees identified by DHC in the Tree Retention Plan have been hand plotted for approximate location only using GPS coordinates and field observations. The location and ownership of unsurveyed trees cannot be confirmed without a legal survey. The property owner or project developer must ensure that all relevant on- and off-site trees are surveyed by a legally registered surveyor, whether they are identified by DHC or not.

Removal of logs from sites

Private timber marks are required to transport logs from privately-owned land in BC. It is property owner's responsibility to apply for a timber mark prior to removing any merchantable timber from the site. Additional information can be found at: <http://www.for.gov.bc.ca/hth/private-timber-marks.htm>

Regulation of Soil Moisture and Drainage

Excavation and construction activities adjacent to TPZs can influence the availability of moisture to protected trees. This is due to a reduction in the total root mass, changes in local drainage conditions, and changes in exposure including reflected heat from adjacent hard surfaces. To mitigate these concerns the following guidelines should be followed:

- Soil moisture conditions within the tree root protection zones should be monitored during hot and dry weather. When soil moisture is inadequate, supplemental irrigation should be provided that penetrates soil to the depth of the root system or a minimum of 30 cm.
- Any planned changes to surface grades within the TPZs, including the placement of mulch, should be designed so that any water will flow away from tree trunks.

- Excavations adjacent to trees can alter local soil hydrology by draining water more rapidly from TPZs more rapidly than it would prior to site changes. It is recommended that when excavating within 6 m of any tree, the site be irrigated more frequently to account for this.

Root Zone Enhancements and Fertilization

Root zone enhancements such as mulch, and fertilizer treatments may be recommended by the project arborist during any phase of the project if they deem it necessary to maintain tree health and future survival.

Paving Within and Adjacent to TPZs

If development plans propose the construction of paved areas and/or retaining walls close to TPZs, measures should be taken to minimize impacts. Construction of these features would raise concerns for proper soil aeration, drainage, irrigation and the available soil volume for adequate root growth. The following design and construction guidelines for paving and retaining walls are recommended to minimize the long-term impacts of construction on protected trees:

- Any excavation activities near or within the TPZ should be monitored by a certified arborist. Structures should be designed, and excavation activities undertaken to remove and disturb as little of the rooting zone as possible. All roots greater than 2 cm in diameter should be hand pruned by a Certified Arborist.
- The natural grade of a TPZ should be maintained. Any retaining walls should be designed at heights that maintain the existing grade within 20 cm of its current level. If the grade is altered, it should be raised not reduced in height.
- Compaction of sub grade materials can cause trees to develop shallow rooting systems. This can contribute to long-term pavement damage as roots grow. Minimizing the compaction of subgrade materials by using structural soils or other engineered solutions and increasing the strength of the pavement reduces reliance on the sub-grade for strength.
- If it is not possible to minimize the compaction of sub-grade materials, subsurface barriers should be considered to help direct roots downward into the soil and prevent them from growing directly under the paved surfaces.

Plantings within TPZs

Any plans to landscape the ground within the TPZ should implement measures to minimize negative impacts on the above or below ground parts of a tree. Existing grass layer in TPZs should not be stripped because this will damage surface tree roots. Grass layer should be covered with mulch at the start of the project, which will gradually kill the grass while moderating soil moisture and temperatures. Topsoil should be mixed with the mulch prior to planting of shrubs, but new topsoil layer should not be greater than 20 cm deep on top of the original grade. Planting should take place within the newly placed topsoil mixture and should not disturb the original rooting zone of the trees. A two-meter radius around the

base of each tree should be left unplanted and covered in mulch; a tree's root collar should remain free from any amendments that raise the surface grade.

Monitoring during construction

Ongoing monitoring by a consultant arborist should occur for the duration of a development project. Site visits should be more frequent during activities that are higher risk, including the first stages of construction when excavation occurs adjacent to the trees. Site visits will ensure contractors are respecting the recommended tree protection measures and will allow the arborist to identify any new concerns that may arise.

During each site visit the following measures will be assessed and reported on by a consulting arborist:

- Health and condition of protected trees, including damage to branches, trunks and roots that may have resulted from construction activities, as will the health of. Recommendations for remediation will follow.
- Integrity of the TPZ and fencing.
- Changes to TPZ conditions including overall maintenance, parking on roots, and storing or dumping of materials within TPZ. If failures to maintain and respect the TPZ are observed, suggestions will be made to ensure tree protection measures are remediated and upheld.
- Review and confirmation of recommended tree maintenance including root pruning, irrigation, mulching and branch pruning.
- Changes to soil moisture levels and drainage patterns; and
- Factors that may be detrimentally impact the trees.

Appendix 7 Report Assumptions and Limiting Conditions

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- 9) Loss or alteration of any part of this report invalidates the entire report.



Hastings Park Traffic, Parking, and Access Study Draft Rev. 1

Pacific National Exhibition
January 14, 2019

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Executive Summary

Hastings Park has been established since the late 1880's and it is currently the second largest park in Vancouver. Hastings Park features extensive seasonal programming and community events year-round, including Playland, the annual Fair at the Pacific National Exhibition (PNE), and the Hastings Racetrack. The City of Vancouver (the City) created a Master Plan in 2011 to guide the future growth and development of the park.

This study assessed opportunities and challenges to enhance the site access, parking, and circulation for future park visitors. R.F. Binnie & Associates Ltd. (Binnie) studied how the Hastings Park redevelopment is expected to influence the site's future transportation characteristics while focusing on two key programs at the park – Playland and the 15-day Fair. There are plans to expand Playland towards the northeast side of the park, and the Fair is also targeting an increase in attendance in future.

Baseline Assessment

The project team completed a detailed baseline assessment of existing transportation-related site conditions. The project team performed transportation surveys during the Fair on August 26, 2017 and during Playland's regular season on July 15, 2018. The survey findings are summarized as follows:

Existing Playland Transportation Demands

- 65% of visitors arrived at Hastings Park by in vehicles with more than two occupants
- 26% of visitors arrived at Hastings Park by transit
- There were approximately 2,500 off-street parking spaces available at Hastings Park during the regular Playland season.
- The total peak parking demand for Playland was estimated to be 0.29 spaces per attendee (non-Fair day)
- The existing parking lots on-site appeared having adequate capacities to accommodate the current parking demand, with minimal increase in on-street parking demand observed in the neighbourhood

Existing Fair Transportation Demands

- 57% of visitors arrived at Hastings Park in vehicles with more than two occupants
- 21% of visitors arrived at Hastings Park by transit
- Ten off-street parking lots were identified during the annual Fair, with a total off-street parking inventory of 3,710 spaces inclusive of the Hastings Racetrack infield parking lot
- The total peak parking demand for the Fair was estimated to be 0.085 spaces per attendee
- The existing parking lots within the study area did not have adequate capacities to accommodate the current parking demand, as evident by the spike in on-street parking demand in the neighbourhood

Transportation Forecast

Based on the survey findings, Binnie estimated the future transportation requirements for Hastings Park during Playland and the Fair. This study found that there are opportunities to implement Transportation Demand

Management (TDM) strategies to encourage visitors to access Hastings Park without using passenger vehicles, reasonably up to 15% which was found to be consistent with the City's and Metro Vancouver's targets.

Future Playland Transportation Demand

- For Playland expansion, the projected attendance would reach 749,500 visitors annually
- With up to 15% reduction in traffic demand based on the TDM consideration and regional shifts in travel patterns, the target parking supply to meet for Playland was estimated to be 2,120 spaces (95th percentile demand)

Future Fair Transportation Demand

- For the 15-day Fair, PNE projected that the attendance would reach 850,000 attendees in 2029 annually
- With up to 15% reduction in traffic demand based on the TDM consideration and regional shifts in travel patterns, the target parking supply to meet for the Fair was estimated to be 3,980 spaces (50th percentile demand) over its 15-day period

Proposed Parking Supply Review

Binnie assessed three parking structure options in this study to meet the future parking demands of Playland and the Fair, where they would need to remain consistent with the Master Plan. These three options included the following:

- Option 1: A three-level parkade in the northwest corner of the site to replace existing lots 7 and 8
- Option 2: A four-level parkade in the existing Lot 16 to replace existing at-grade parking; and
- Option 3: A phased approach to first construct a three-level parkade in Lot 16 to meet the parking demand of Playland and a potential northwest parkade in the future to meet the long-term Fair parking demand, if required.

Based on discussions with the PNE and City, this study recommended Option 3 to accommodate the future parking demands to be generated by the proposed Playland extension while initially maintaining the surface parking at lots 7 and 8. The study assumed that an additional 200 parking spaces could be provided in the area that is currently occupied by the Tech Services Buildings. Further, the study assumed that the Racetrack infield parking would be maintained during the Fair. The study also recommended that the existing off-site school parking lots be maintained during the Fair for staff parking.

These assumptions should allow Option 3 to accommodate the forecast Playland parking demand and close to meeting the 50th percentile parking demand during the Fair; however, PNE should monitor the parking conditions following the Playland expansion to assess whether more aggressive TDM strategies would need to be considered for the Fair. If necessary, a two-level parkade might be considered in the northwest corner to accommodate the unserved parking demand.

Access Review

Hastings Park currently has two major access points, and five minor access points. The Master Plan discussed the challenges associated with the existing gate locations and in order to enhance the park for pedestrians and cyclists, there would be opportunities to consolidate the existing accesses. It is anticipated that a pedestrian and bicycle connection to New Brighton Park would be provided in the future with continuous north-south and east-

west active transportation corridors. On Renfrew Street, new crossings would need to be considered to provide gateway accesses to Hastings Park for pedestrians and cyclists.

Traffic Review

Based on the Master Plan, there are changes expected to both parking lots and accesses at Hastings Park that would affect the existing routes used by visitors to travel to and from the park. The proposed parkade at Lot 16 and the reliance of lots 7 and 8 for on-site parking would increase the traffic demands along East Hastings Street and Renfrew Street.

For the proposed Lot 16 parkade, traffic calming measures could be considered on the local roads south of East Hastings Street to discourage shortcutting traffic on residential street. The existing signal at East Hastings Street and Windermere Street could be upgraded to accommodate the increased in traffic accessing the proposed parkade.

For the proposed northwest parkade in the long-term horizon and the elimination of other parking lots in Hastings Park, there would be increased traffic demand at the McGill Street and Renfrew Street intersection and at the East Hastings Street and Renfrew Street intersection. During the Fair, considerations should be given to control these intersections, particularly the latter, differently to minimize the vehicle-pedestrian conflicts that might improve traffic operations and safety.

TDM Opportunities

This study reviewed TDM opportunities that should be considered during Playland and the Fair at Hastings Park. These TDM opportunities are as follows:

- Encourage ride-sharing with carpool-only parking lots or prime parking locations
- Designate passenger loading areas, particularly with the pending introduction of ride-hailing services and to enhance the existing taxi operations
- Improve pedestrian crossing on major roadways, such as Renfrew Street
- Encourage visitors to cycle to Hastings Park
- Optimize the existing parking lot layouts and their parking supplies
- During the Fair, transit pass incentives should be considered to encourage transit ridership
- During the Fair, consider implementing a shuttle service to provide direct connections between Hastings Park and nearby SkyTrain Stations
- During the Fair, consider providing bicycle valets to improve convenience for cyclists and encourage bicycle ridership

1 Project Background

1.1 Project Overview

Hastings Park is a city park located in the Hastings-Sunrise neighbourhood of Vancouver. The Park has been established since the late 1880's and it is the second largest park in Vancouver with an area of 154 acres. In contrast to other large parks in Vancouver, Hastings Park is unique in that features extensive seasonal programming and community events year-round.

A desire to redevelop and revitalize Hastings Park has resulted in the creation of a Master Plan to guide future growth and development of the park. The high-level development principles and changes proposed in the Master Plan are expected to impact site traffic, parking, and access.

The purpose of this report is to identify existing and future challenges site transportation characteristics, and identify opportunities to address those challenges and improve site access and circulation for future park visitors.

1.1.1 Hastings Park History

Hastings Park was established by the Provincial Government in 1889 "for the use, recreation, and enjoyment of the public". The Vancouver Exhibition Association, later known as the Pacific National Exhibition (PNE), has operated an annual fair in the park since 1910. In addition to the annual Fair at the PNE, programming at the park includes Playland's seasonal amusement attractions, the Hastings Racetrack horse racing facility, and several buildings and amenities that host programming year-round.



Figure 1-1: Hastings Park Agrodome

During the early 2000's, the City of Vancouver (the City)'s Council directed a review of options for the future of the PNE at Hastings Park. This review resulted in the creation of an early restoration plan ("Hastings Park/PNE – Four Approaches for the Future") that provided direction for the current Hastings Park/PNE Master Plan (Master Plan)

1.1.2 The Master Plan: A New Vision for Hastings Park

The Master Plan, established in 2011, was created to direct future growth and the redevelopment of Hastings Park. The plan proposes the transformation of Hastings Park into a greener, year-round destination that renews Vancouver's historic annual fair and amusement park while securing public access and park space. The Master Plan was guided by eight key principals:

- **Create Clear Pedestrian and Vehicle Organization** by consolidating parking lots, optimizing park access and transforming the southern part of the park into a pedestrian and cyclist precinct
- **Relocate and Expand Playland** to provide room for new greenspace as well as rides and attractions
- **Connect to the Burrard Inlet** by creating a daylighted stream from the Sanctuary to the Inlet
- **Create a Celebration "Heart of the Park"** by creating more flexible, programmable space for festivals, events and day-to-day use
- **Connect to the Community** by providing safe and convenient pedestrian and bicycle access through and around Hastings Park
- **Expand Park Space and Habitat** by consolidating parking, road, and back-of-house uses to the northern portion of the site
- **Build in Flexibility** by creating spaces that can transform and adapt to future park needs
- **Create a Hastings Park Identity** so the Park is recognized as an active, public park destination.



Figure 1-2: Hastings Park / PNE Master Plan

1.1.3 Project Objectives

The Pacific National Exhibition (PNE) has retained Binnie to prepare a traffic, parking, and access study for the next phase of the Hastings Park/PNE Master Plan (Master Plan) projects, including the Playland Redevelopment project. This redevelopment will include expanding Playland from approximately 5.8 to 9.5 acres in size at the southern portion of the park northwards into the current footprint of parking lots 9B and 9C.

The purpose of this report is to evaluate traffic, parking, and access conditions at Hastings Park under both existing and future conditions, and identify opportunities to improve transportation conditions through the park's redevelopment. The scope of this study includes anticipating the future parking needs of Hastings Park and providing recommendations on how to accommodate future parking demand. Additionally, multimodal traffic and site access is evaluated based on site changes outlined in the Hastings Park – PNE Master Plan.

1.1.4 Project Approach

In order to understand how the redevelopment of Hastings Park will influence the site's future transportation characteristics, a baseline assessment of existing site conditions was first conducted.

This study largely focuses on understanding existing conditions at Hastings Park while two key programs are taking place at the park: the regular Playland season, that operates from May to September annually, and the 15-day Fair that takes place at Hastings Park every August. Data were collected on existing attendance, parking demand, and visitor travel patterns through on-street and off-street parking surveys and random intercept surveys of park visitors.

Once existing travel patterns and parking demand were understood, future attendance projections and regional travel patterns were used to estimate the future parking demands Hastings Park will generate after park redevelopment, particularly the expansion of Playland.

After the future parking demand for the park was estimated, options for meeting and managing that demand were recommended in terms of future parking supply and Transportation Demand Management (TDM) opportunities.

Site access was reviewed by evaluating the existing access locations and the proposed consolidation of site accesses considered in the Hastings Park – PNE Master Plan. Access recommendations were provided in alignment with options considered in the Master Plan as well as recommendations surrounding the consolidation of off-street parking supply.

Existing traffic conditions on the road network surrounding Hastings Park were evaluated using intersection traffic data provided by the City and turning movement counts collected at intersections where data were not available. Based on the proposed access locations and parking arrangements, this study provides a forecast on how the recommendations of the Master Plan would impact traffic flows in the future on the City's road network.

1.2 Existing Attendance and Travel Patterns at Hastings Park

Existing traffic and parking conditions at Hastings Park are directly influenced by park attendance and visitor travel patterns. In this section, the existing conditions of Hastings Park are considered in terms of existing attendance during Playland and the Fair, as well as visitor travel patterns.

Annual and Daily attendance information has been provided by the PNE, while information on visitor travel patterns has been collected through visitor intercept surveys during Playland and the Fair.

1.2.1 Existing Hastings Park Attendance

Based on the data received for the 2017 season, there were **537,547 Playland visitors** during the 108 days it was open, and **722,466 visitors** during the 15-day Fair. Due to the large variance in both Playland and Fair daily attendance rates throughout the season, average daily attendance values for either program are of limited use when interpreting parking demand at Hastings Park. As a result, daily attendance for both Playland (2018) and the Fair (2017) is expressed throughout the study in terms of 50th, 85th and 95th percentile rates of attendance. The variance in both Playland and Fair daily attendance through their respective seasons is illustrated in **Figure 1-3** and **Figure 1-4**.

Based on the daily attendance information provided by the PNE for Playland and the Fair, the existing 50th, 85th and 95th percentile attendance rates for Playland and the Fair have been calculated and are summarized in **Table 1-1**.

Playland and Fair attendance data provided by the PNE can be found in **Appendix A: Playland and Fair Attendance Records and Projections**.

Table 1-1: Existing Playland and Fair Attendance Rates, Values Rounded to Nearest 50 (Source: PNE)

Daily Attendance	Playland (2018)	Fair (2017)
50th Percentile	2,890	46,870
85th Percentile	4,240	56,170
95th Percentile	5,800	59,670

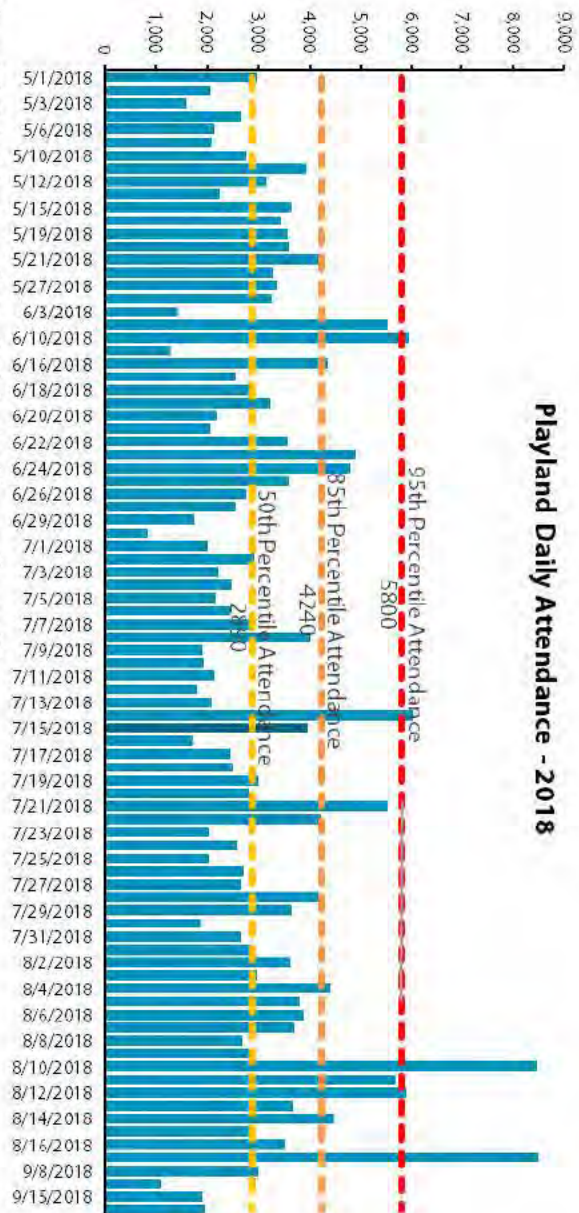


Figure 1-3: Daily Attendance for the 2018 Playland Season (Source: PNE)

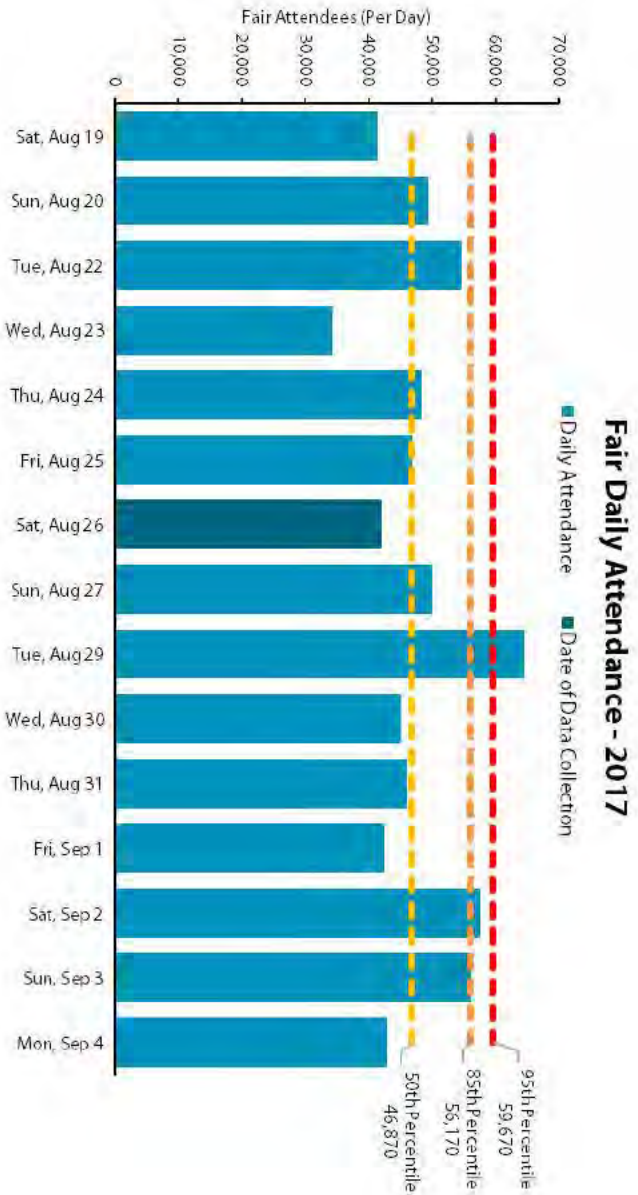


Figure 1-4: Daily Attendance for the 2017 15-Day Fair (Source: PNE)

1.2.2 Existing Hastings Park Mode Share

The existing mode share of Playland and the Fair visitors has been estimated based on the one-day intercept surveys conducted by TransTech Data Services Ltd. (TransTech) during the Fair on August 26, 2017 and during Playland’s regular season on July 15, 2018. Although additional data would be required to fully understand the mode choices and trends of Hastings Park visitors, which may be influenced by daily variations such as weather and programming, the one-day intercept survey results can be used to indicate general trends in the mode choices of park visitors.

The overall trip shares for each indicated travel mode during the Playland and Fair surveys are shown in **Figure 1-5** and **Figure 1-6**, respectively. A summary of intercept survey questions and results can be found in **Appendix B: Intercept Survey Questions and Survey Results**.

Playland Mode Share

On the day of data collection during Playland’s regular season, most park visitors surveyed indicated that they carpooled (65%) to Hastings Park. Over one-quarter (26%) took transit while the remainder walked (8%), took a taxi (1%), and drove alone (0.4%).

Playland Mode Share (2018)

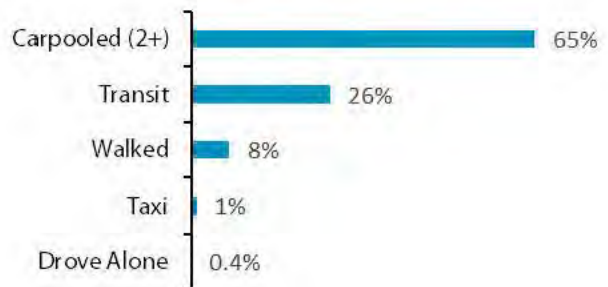


Figure 1-5: Indicated Mode Share from Playland intercept survey on July 15, 2018 (Transtech Data Services)

15-day Fair Mode Share

On the day of data collection during the 15-day Fair, most park visitors surveyed indicated they carpooled (57%) to Hastings Park and over one-fifth (21%) took transit. A notably higher share of visitors chose to drive alone (7%) and took a taxi (7%) when comparing the results to the Playland survey results. The remainder of respondents indicated they walked (6%), rode a bicycle (2%), used a care share service (1%), or a shuttle (0.4%).

Fair Mode Share (2017)

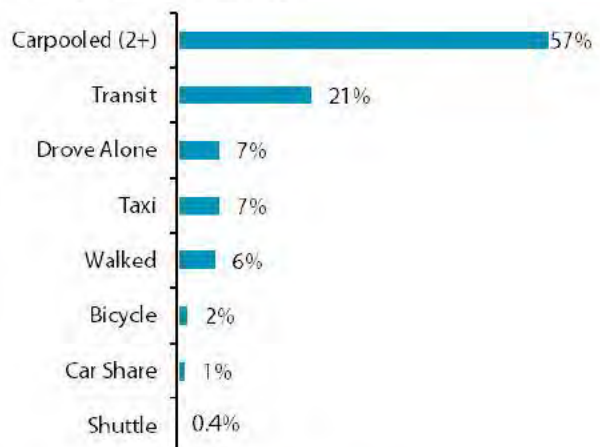


Figure 1-6: Indicated Mode Share from Fair Intercept Survey on August 26, 2017 (Transtech Data Services)

1.2.3 Hastings Park Travel Patterns by Time of Day

Visitor arrival and departure information is based on one-day pedestrian access counts conducted by TransTech during the Fair on August 26, 2017 and during Playland's regular season on July 15, 2018. The gates where pedestrians were counted are shown in **Figure 1-7**. Data collected by TransTech during the access counts can be found in **Appendix C: Access Count and Parking Data from TransTech** while methodology and findings from both surveys are summarized in the following subsections.

Playland Arrival and Departure Patterns

During the Playland pedestrian access count, visitors entering and exiting the site were counted at Gate 13 as it was indicated that this is the primary access during Playland. Data were collected from 10:00 AM – 6:30 PM.

Findings from the one-day pedestrian access count indicate that the peak arrival time for Playland is generally in the morning when it first opens at 10:00 AM. Peak departure time is less defined, as the rate of departure fluctuates from 3:30 PM to 6:30 PM, with peaks occurring at 3:30 PM, 4:30 PM, 5:30 PM, and 6:30 PM. Pedestrians arriving and departing from Hastings Park, by time of day, is shown in **Figure 1-8**.

Fair Arrival and Departure Patterns

During the Fair, pedestrian access counts were conducted at Gate 1, Gate 4, Gate 13 and the Miller Drive Gate. Findings from the one-day pedestrian access count, indicate that generally peak arrival time for the Fair is 11:00 AM. A spike in arrivals at 2:00 PM was likely a result of the programming on site during the day of data collection. During data collection, departures had a minor peak at around 5:30 PM, with the greatest peak in pedestrian departures occurring at 8:30 PM.

Pedestrians arriving and departing from Hastings Park, by time of day, is shown in **Figure 1-10**. When comparing arrivals and departures, the rate of departures don't begin to surpass the rate of visitors arriving until 5:00 PM. This is likely due to the late-night programming that takes place during the 15-day Fair



Figure 1-7: Hastings Park Pedestrian Gates

Playland Arrivals and Departures by Time of Day (2018)

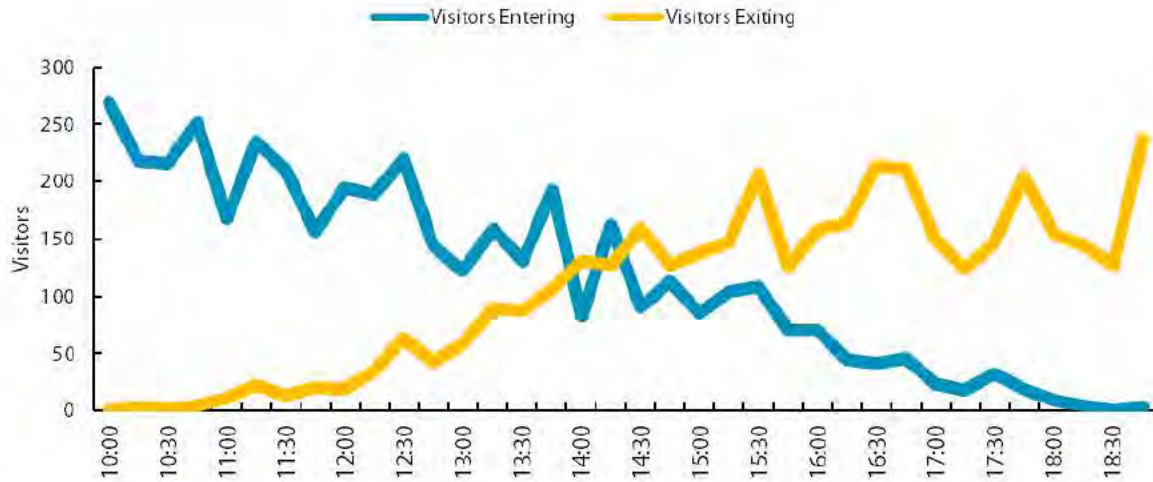


Figure 1-8: Playland Arrivals and Departures by Time of Day on July 15, 2018 (TransTech)

Fair Arrivals and Departures by Time of Day (2017)



Figure 1-9: Fair Arrivals and Departures by Time of Day on August 26, 2017 (TransTech)

Pedestrian Gate Utilization

The percentage of pedestrians that arrived or departed through each of the four Gates during the Fair pedestrian access count is shown in **Figure 1-11**. Based on the count, Gate 1 had the highest utilization during the Fair, followed by Miller Gate, Gate 13, and then Gate 4.

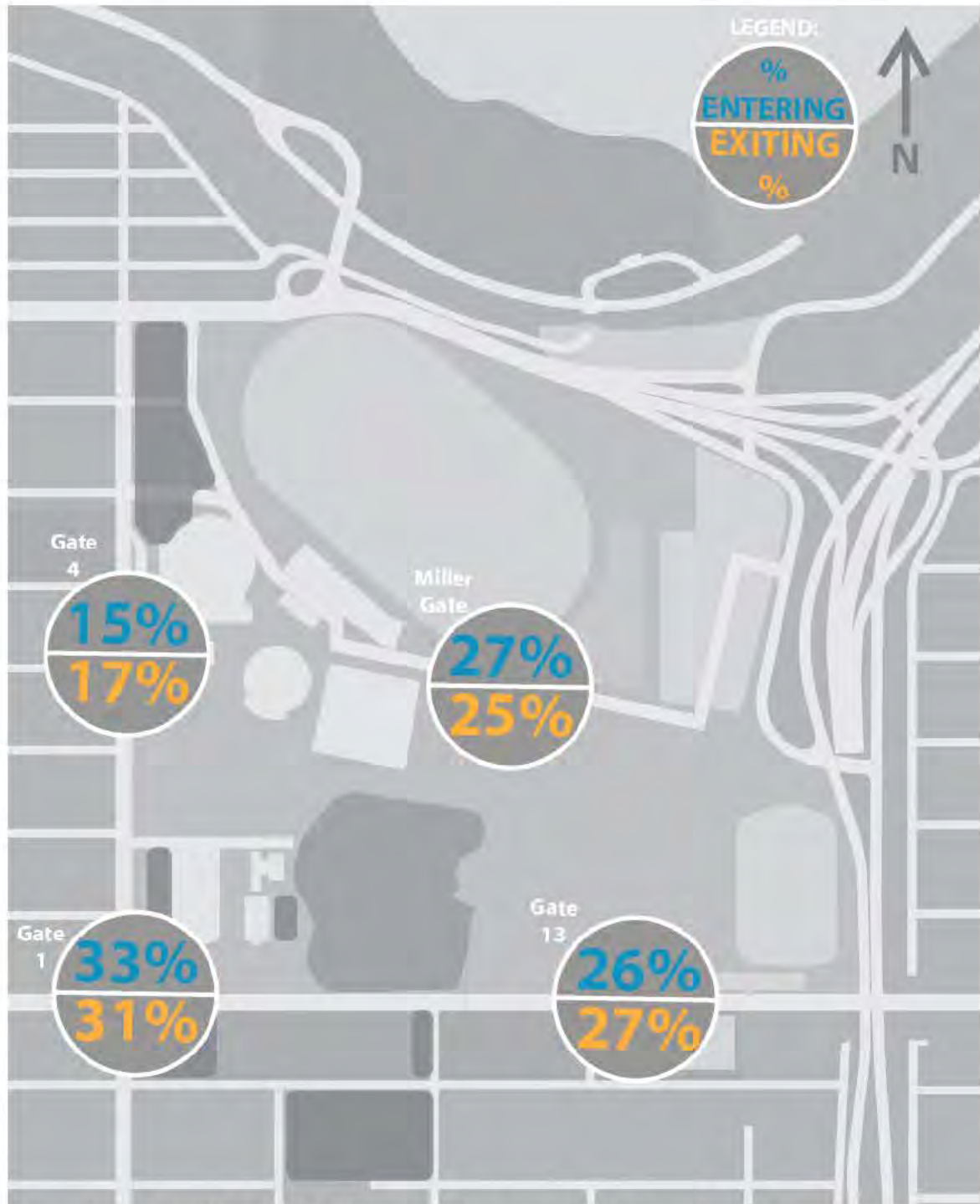


Figure 1-10: Utilization of Pedestrian Gates During the Fair on August 26, 2017 (Source: TransTech)

1.2.4 Amphitheatre Event Travel Patterns

As part of the intercept survey conducted during Playland on July 15, 2018 visitors were asked if they were visiting Hastings Park to attend Playland, the Concert that was taking place that day at the Amphitheatre in the evening, or both. Surveys were conducted from 10:00 AM to 5:30 PM at the Playland entry gate, as well as the entrance to the Amphitheatre. Overall, there were 227 survey responses collected at the Playland entry gate, and 82 collected at Amphitheatre entrance.

For the surveys conducted at the gates to Hastings Park, attendees were asked:

- If they were visiting Playland, the concert, or both;
- The postal code of their primary residence;
- The mode they used to travel to Hastings Park that day;
- How many passengers were in their vehicle (if they drove);
- If they parked on-street, off-street or on private property; and
- If parking off-street, the lot in which they parked.

Arrival time was only recorded for the surveys conducted at the Playland entry gate, and there is possibility that the survey responses may overlap between the Playland entry gate and Amphitheatre entrance; however, it has been assumed that attendees that have already provided a survey response at the entrance to the park would not provide a second one at the Amphitheatre entrance by notifying TransTech's staff.

Survey Results

Of the 227 survey responses at the Playland entry gate:

- 69% were visiting Playland only, 12% were visiting the concert only, and 19% were visiting both (**Figure 1-11**)
- Survey respondents attending both Playland and the concert arrived as early as 10:00 AM, however, the first visitors arriving for just the concert started arriving at 1:00 PM. The concert did not begin until 7:00 PM that evening. (**Figure 1-12**)
- For visitors who indicated that they were attending both Playland and the concert, the peak arrival period was indicated by the survey responses to be between 2:00 PM – 3:00 PM. (**Figure 1-12**).
- For visitors who indicated that they were attending the concert only, the peak arrival period was indicated by the survey responses to be between 4:00 PM and 5:00 PM. (**Figure 1-12**)

Of the 309 combined survey responses at the entrance to Hastings Park and the Amphitheatre entrance:

The majority of people visiting the concert at the Amphitheatre indicated that they carpooled (65%), a high proportion took public transit (27%), with the remainder walking (4%), taking a taxi (3%) and driving alone (1%) (**Figure 1-13**).

Respondents Reason for Visiting Playland

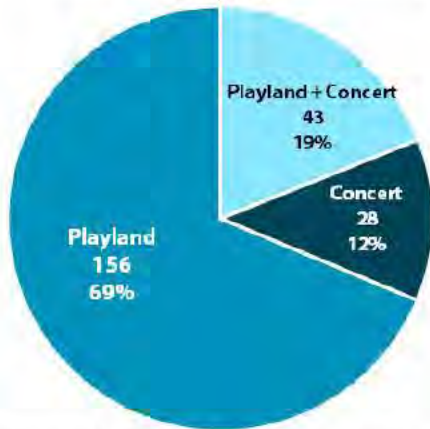


Figure 1-11: Hastings Park attendees "reason for visiting" on July 15, 2018 (Source: TransTech)

Survey Respondents Attending Concert, Playland, or Both

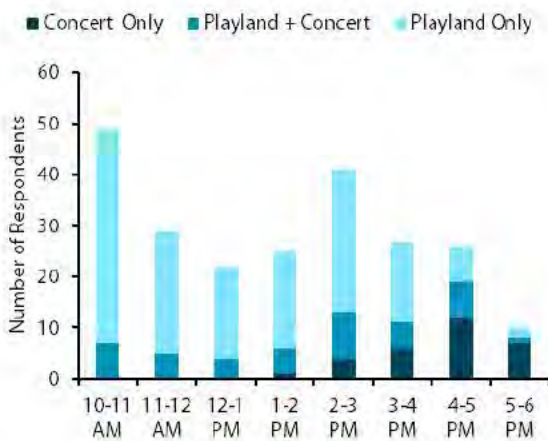


Figure 1-12: Arrival Time of Survey Respondents Attending Playland, the Concert, or Both on July 15, 2018 (Source: TransTech)

Ampitheatre Mode Share (2018)

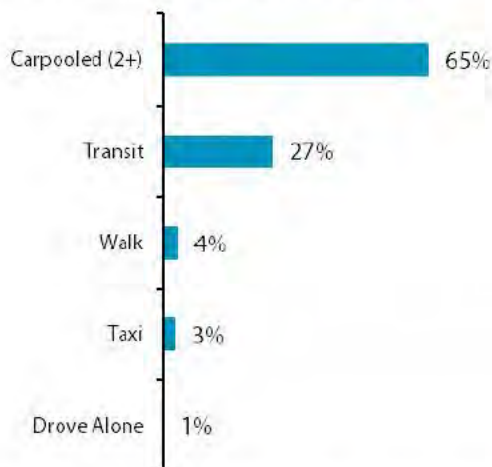


Figure 1-13: Mode Share of Survey Respondents Attending the Concert on July 15, 2018 (Source: TransTech)

1.3 Forecast Hastings Park Future Attendance

Future Hastings Park attendance projections have been provided by the PNE in terms of 2029 projected annual attendance for the Playland expansion as well as the Fair. For the 15-day Fair, PNE projected that the attendance would reach **850,000 attendees in 2029**. For the future of Playland, four expansion scenarios were considered with varying attendance projections.

The Playland expansion scenario that was ultimately selected for this study is expected to expand the current Playland site from 5.8 to 9.5 hectares and is estimated to increase attendance from 537,547 in 2017 to **749,500 visitors annually in 2029**. The planned Playland expansion area is illustrated in **Figure 1-14**. A summary of the four expansion scenarios evaluated can be found in **Appendix A: Playland and Fair Attendance Records and Projections**.



Figure 1-14: Planned Playland Expansion Area (Source: Hastings Park - PNE Master Plan)

2 Parking

2.1 Existing Parking Conditions at Hastings Park

The following sections examine the existing parking conditions at Hastings Park during Playland and the Fair. Both on-street and off-street parking conditions have been considered when estimating the overall parking demand generated by Hastings Park.

2.1.1 On-Street Parking Survey

On-street parking surveys were conducted by TransTech on July 15, 2018 during Playland's regular season, and on August 26, 2017 during the Fair. The study area boundary for the on-street parking survey is shown in **Figure 2-1**.

On-street parking surveys were conducted by comparing the vehicles parked on-street during two intervals to capture the peak and off-peak (minimum) on-street parking demand generated by Hastings Park. The peak demand survey took place from 12:00 PM to 4:00 PM, while Hastings Park was open. The off-peak demand survey took place from 2:30 AM to 4:00 AM, while Hastings Park was closed for the night. To estimate on-street parking demand, it was assumed during the survey that there was a general compliance to on-street parking restrictions, which was generally confirmed based on the field data.

Generally, results did not indicate there was significant on-street parking demand on the day Playland was operating; however, a significant increase in on-street parking demand during the 15-day Fair was identified.

Playland On-Street Parking Demand

Highlights from the Playland on-street parking survey on July 15, 2018 are as follows:

- There were 686 more vehicles parked in the study area during the off-peak interval, when Hastings Park was closed, than during the day;
- For street segments in the study area *without residential parking restrictions*, there were 22 more vehicles parked in the study area at night than during the day (residential parking restrictions shown in **Figure 2-1**); and
- The street segment with the highest on-street parking occupancy during the peak interval was East Hastings Street, where 114 vehicles were recorded.

The higher number of vehicles parked in the study area at night, when Hastings Park is closed, suggests that there was minimal on-street parking demand generated by Playland on the day of data collection and that most attendees were able to park on-site.

On-Street Parking Demand during the Fair

Highlights from the Fair on-street parking survey on August 26, 2017 are as follows:

- There were 143 move vehicles parking in the study area during the day, when the Fair was taking place, than at night;
- For all street segments *without residential parking restrictions*, there were 391 more vehicles parked in the study area during the day than at night (residential parking restrictions shown in **Figure 2-1**);
- The street segment with the highest on-street parking occupancy was East Hastings Street with 152 vehicles parked when it was surveyed; and
- The increased number of vehicles parked within the study area during the day, especially on streets without residential parking restrictions, suggests that the increased on-street parking demand during the day is likely generated by the Fair.



Figure 2-1: On-Street Parking Survey Study Area Boundary and Parking Restrictions. (Source: City)

On-Street Parking Survey Findings

The change in on-street parking demand on street segments *without residential parking restrictions* during peak and off-peak times for both Playland and the Fair is illustrated in **Figure 2-2**. Street segments with residential parking restrictions are neglected based on the assumption that parking demand on those streets is primarily residential.

As expected, the on-street parking demand during the Fair is substantially greater than what was recorded during Playland. During Playland, the on-street parking demand during peak and off-peak times is similar, with 22 more vehicles recorded at night than during the day. In contrast, there were 391 more vehicles parked on-street in the study area during the day when the Fair was operating.

Although the peak on-street parking demand during the Fair was estimated from the survey to be approximately 391 vehicles, the true demand is likely higher as this value only includes vehicles parked on the streets, but anecdotally, Fair-related vehicles were also observed parking in alleys and on private residential properties where permitted by the local residents.

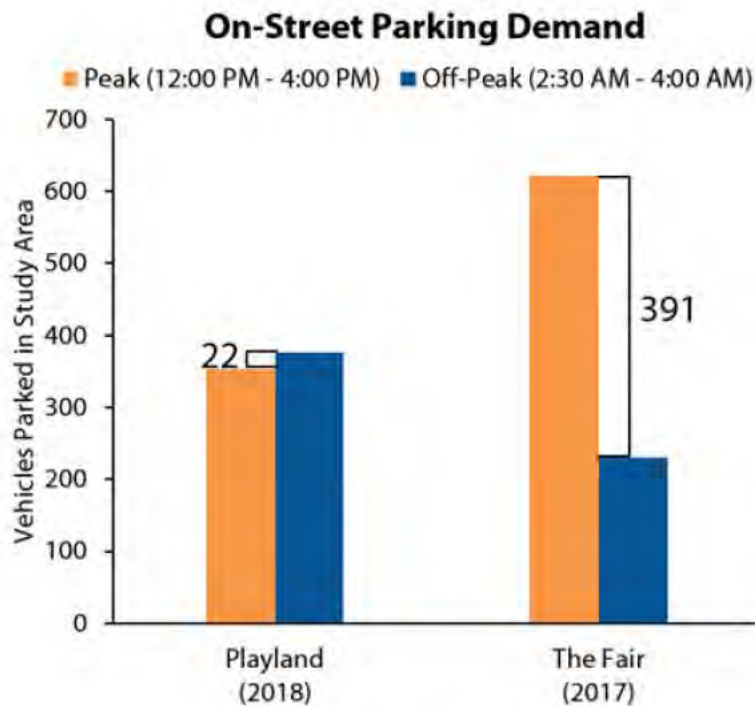


Figure 2-2: On-Street Parking Demand During Peak and Off-Peak times (Source: TransTech)

2.1.2 Existing Off-Street Parking Inventory

Hastings Park's existing off-street parking supply varies with the programming taking place on site. During Playland, 14 parking lots were identified on or near Hastings Park that are available during the regular season. Of those 14 lots, two are reserved for the Hastings Racetrack.

During the Fair, several of these lots are not available but additional parking areas are provided. Additional parking inventory that is only available during the Fair includes using the Hastings Racetrack infield for parking, and providing additional staff parking at two nearby elementary schools.

The following sections describe the identified off-street parking inventories at Hastings Park during Playland and the 15-day Fair

Playland Off-Street Parking Inventory

An off-street parking survey was conducted by TransTech on July 15, 2018 during Playland's regular season. This survey included lot inventory and occupancy counts in off-street parking lots on or near Hastings Park. The lots identified by TransTech to be available during Playland for visitors and staff are identified in **Figure 2-3**. Lots reserved for Hastings Racetrack parking have not been included in the Playland parking inventory.

From the data collected, there are approximately **2,500 off-street parking spaces** available at Hastings Park during the regular Playland season. Of those spaces, 2,160 are visitor parking and 340 are reserved for staff and back-of-house use.

The locations and identified inventories of off-street lots during Playland regular season are shown in **Table 2-1** and **Figure 2-3**, respectively.

Fair Off-Street Parking Inventory

Several lots available during Playland are not available during the Fair, but additional parking is provided within the Hastings Racetrack infield and at two nearby elementary schools.

Ten off-street parking lots were identified by TransTech on August 26, 2017 that are available during the annual Fair, with a total off-street parking inventory of **3,710 spaces**. The locations and identified inventories of these lots are shown in **Table 2-2** and **Figure 2-4**, respectively.

Table 2-1: Playland Parking Lot Inventories (Source: TransTech)

Lot No.	Lot Name	Description	Inventory
1	9B and 9C	Visitor Parking	876
2	7, 8, Pacific Coliseum	Visitor Parking	571
3	Pender & Renfrew	Visitor Parking	354
4	Lot 16	Visitor Parking	277
5	Lot 1	Visitor Parking	55
6	Community Centre	Visitor Parking	28
7	West of Circus West	Staff/Back-of-House Parking	40
8	Agrodome South	Staff/Back-of-House Parking	60
9	Rollerland Lot	Staff/Back-of-House Parking	100
10	Northeast of Agrodome	Staff/Back-of-House Parking	60
11	Pacific Coliseum East	Staff/Back-of-House Parking	40
12	Gate 15 Lot	Staff/Back-of-House Parking	41
Total:			2,502

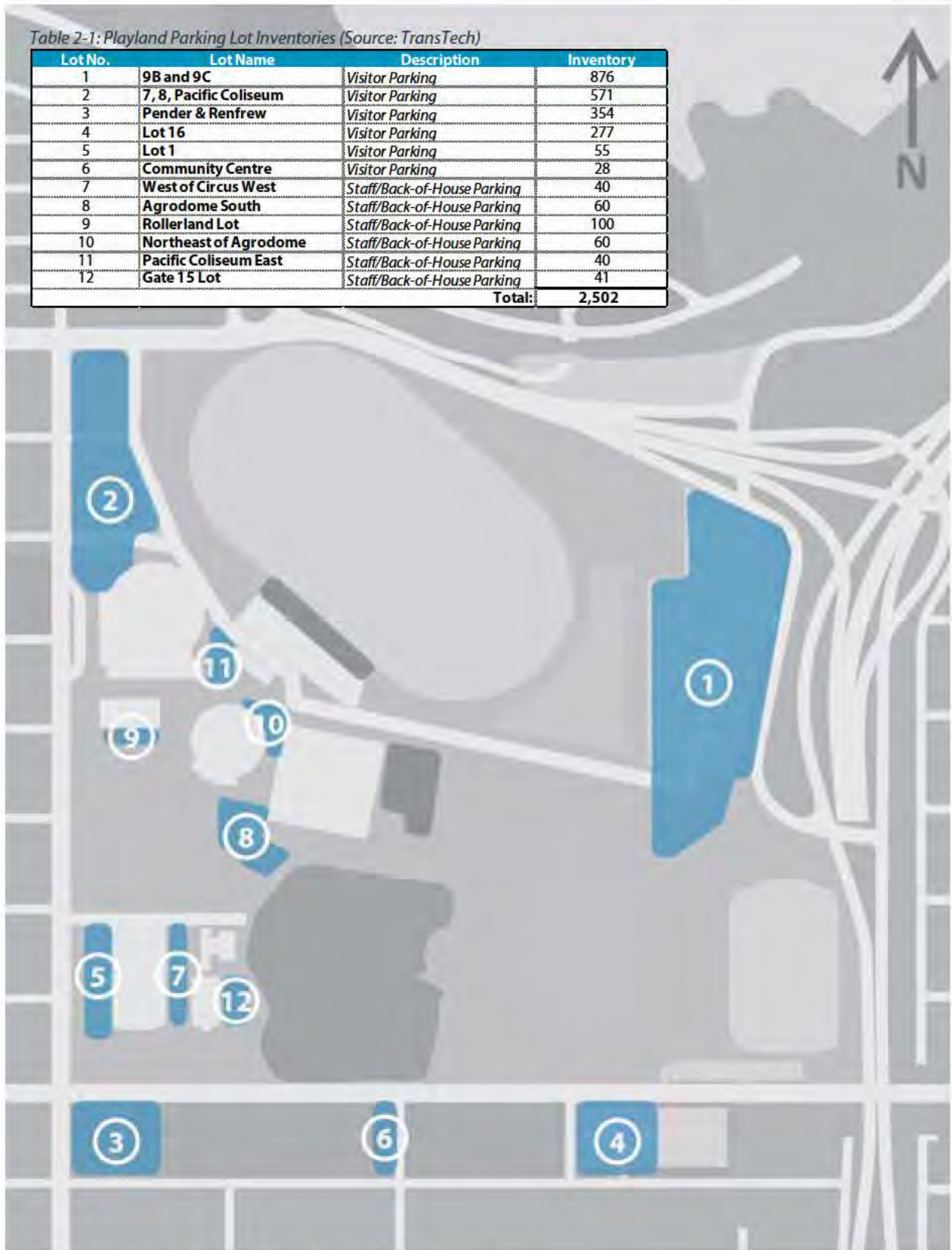


Figure 2-3: Playland Off-Street Parking Lots (Source: TransTech)

Table 2-2: Fair Off-Street Parking Inventory (Source: TransTech)

Lot No.	Name	Description	Inventory
1	Lots 9B and 9C	Visitor Parking	876
2	Lots 7, 8, Pacific Coliseum	Visitor Parking	571
3	Pender & Renfrew Lot	Visitor Parking	354
4	Lot 16	Visitor Parking	277
5	Lot 1	Visitor Parking	55
6	Community Centre Lot	Visitor Parking	28
7	Racetrack Infield	Visitor Parking	1,200
8	Gate 15 Lot	Staff/Back-of-House Parking	41
9	Hastings Elementary	Staff/Back-of-House Parking	100
10	Dr. A.R. Lord Elementary	Staff/Back-of-House Parking	208
Total:			3,710



Figure 2-4: Fair Off-Street Parking Lots (Source: TransTech)

2.1.4 Existing Off-Street Parking Demand

Off-street parking lot occupancy surveys were conducted by TransTech on July 15, 2018 during Playland's regular season and on August 26, 2017 during the Fair. These surveys and additional attendance data provided by the PNE are used to estimate the existing off-street parking demand at Hastings Park.

Off-Street Parking Demand during Playland

Off-Street parking occupancy data for Playland were collected on Sunday, July 15, 2018. Based on attendance data provided by the PNE, this was the 18th busiest day of Playland's 2018 season with 3,967 visitors in attendance. **Figure 2-5** shows the off-street parking lot utilization by time of day on the day of data collection. Key findings from the Playland off-street parking demand survey are as follows:

- Parking lots were found to have varying peak utilization times. See **Appendix D: Utilization of Each Lot by Time of Day** for peak utilization of each lot;
- Peak utilization of off-street parking was recorded at 3:00 PM. The maximum visitor off-street parking occupancy recorded was 1,074 of the 2,161 spaces, or about 50% utilization;
- The maximum back-of-house and staff off-street parking occupancy recorded at 3:00 PM was 79 of the 341 spaces, or 23%;
- Based on the peak demand recorded of 1,153 occupied spaces and the 3,967 visitors on the day of data collection, peak parking demand was estimated to be **0.29 off-street spaces per Playland attendee**

Figure 2-7 shows the occupancy of off-street parking lots during peak utilization at 3:00 PM. It is important to note that there was an event taking place at the Hastings Racetrack on the day of data collection, which may have contributed to the high off-street parking occupancy recorded in lots 7 and 8; therefore, not all parking demand identified on-site was necessarily generated by Playland and the estimated parking demand for Playland may be conservative.

Off-Street Parking Demand during the Fair

Off-Street parking occupancy data during the Fair were collected on Saturday, August 26, 2017. Based on attendance data provided by the PNE, there were 42,105 Fair attendees on that day. **Figure 2-6** shows the off-street parking lot utilization by time of day on the day of data collection, with the dashed-line indicating the off-street parking supply threshold during the Fair if Racetrack infield parking is not available for the visitors. Key findings from the Fair off-street parking demand survey are as follows:

- Parking lots were found to have varying peak utilization times. See **Appendix D: Utilization of Each Lot by Time of Day** for peak utilization of each lot;
- The maximum off-street parking occupancy recorded was 3,191 spaces, or 86% utilization, at 4:15 PM;
- All lots reached near-maximum utilization at varying times during the day except the Racetrack infield; and
- Based on the peak parking demand identified and the number of attendees on the day of data collection, a peak parking demand has been identified of **0.075 off-street spaces per Fair attendee**.

Figure 2-8 shows the occupancy of each parking lot during peak utilization at 4:15 PM. The estimated off-street parking inventory during the Fair is 3,710 parking spaces when vehicles are also parked in the Racetrack infield.

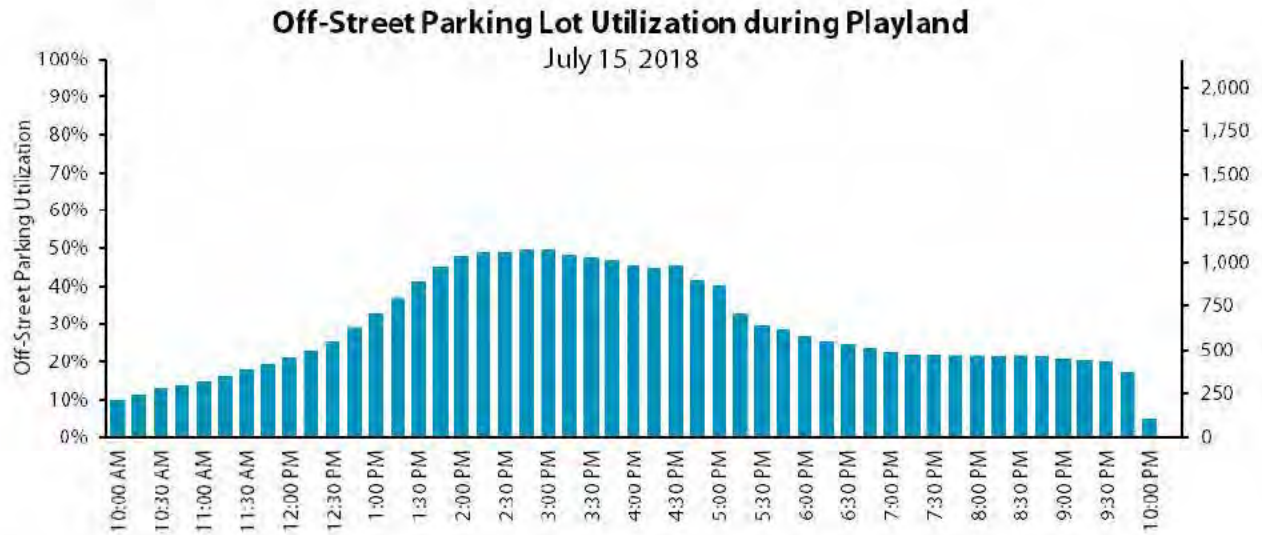


Figure 2-5: Off-Street Parking Demand by Time-of-Day during Playland (Source: TransTech)

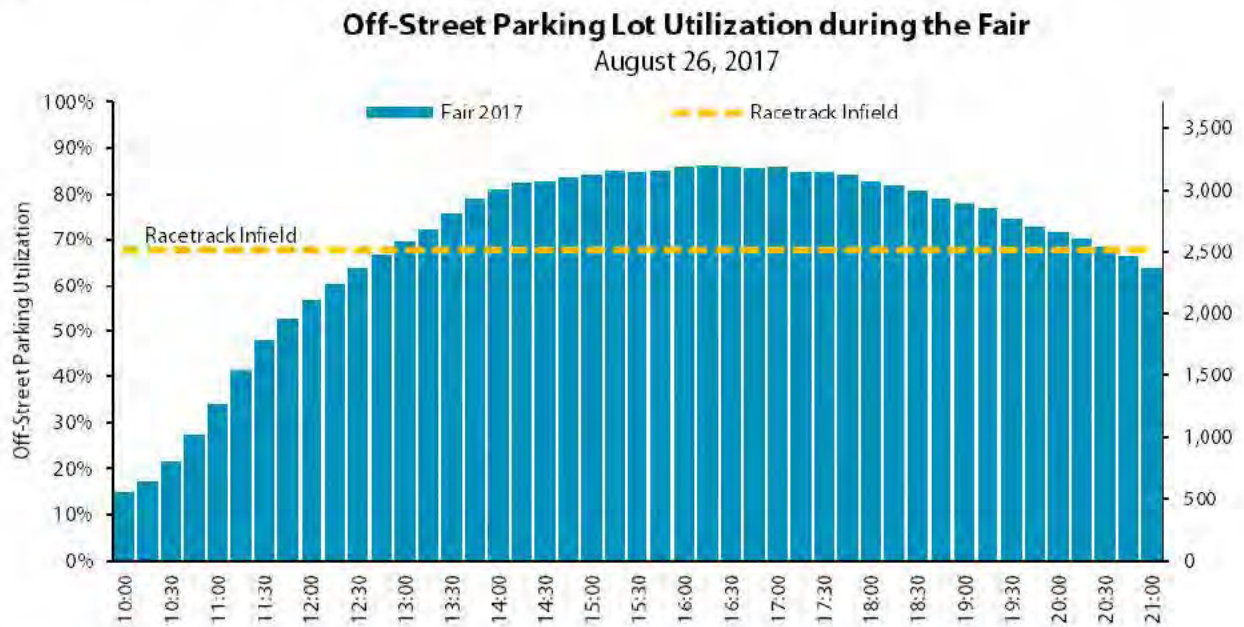


Figure 2-6: Off-Street Parking Demand by Time-of-Day during the Fair (Source: TransTech)

2.1.5 Estimating Existing Parking Demand at Hastings Park

The overall parking demand for Hastings Park is estimated by considering both the results of the on-street and off-street parking surveys.

During Playland, the on-street parking survey was not able to identify measurable on-street parking demand; therefore, only off-street survey is considered in estimating parking demand. In contrast, the Fair on-street parking survey was able to identify at least 391 on-street vehicles that may be associated with Hastings Park parking demand. The observations suggest that the parking demand during the Fair is not met by the off-street parking supply, and on-street parking is absorbing some of the unserved parking demand by the study parking lots. Although it is recognized that the true on-street parking demand during the Fair may be higher, only identified on-street demand has been considered in the demand forecast.

Based on the attendance information on the days of data collection and the combined on-street and off-street parking surveys, the peak parking demand per attendee is calculated in **Table 2-3** and is estimated as:

- 0.29 spaces per attendee during Playland; and
- 0.085 spaces per attendee during the Fair.

Table 2-3: Estimated Peak Parking Demand Per Attendee during Playland and the Fair

Scenario	Peak Off-Street Visitor Parking Demand	Peak On-Street Parking Demand	Attendees (Day)	Peak Parking Demand Per Attendee
Playland (July 15, 2018)	1,153	-	3,967	0.29
Fair (August 26, 2017)	3,191	391	42,105	0.085

When comparing the peak parking demand per attendee estimated for Playland of 0.29 to the 0.085 estimated for the Fair, the lower number of parking spaces occupied per attendee during the Fair suggests that the demand is restricted by the off-street parking supply, and that the limited parking supply is influencing how visitors are travelling to Hastings Park.

Using the peak parking demand per attendee calculated for Playland and the Fair on the days of data collection, and the daily attendance percentiles for Playland and the Fair calculated previously in **Table 1-1**, the peak parking demand for Playland and the Fair on 50th, 85th and 95th percentile attendance days is estimated in **Table 2-4**.

Table 2-4: Estimated Existing Peak Parking Demand on 50th, 85th, and 95th Percentile Attendance Days

Attendance Rate	Peak Parking Demand (Per Attendee)	Peak Parking Demand
Playland (2018)		
50th Percentile (2,890 Attendees)	0.29	840
85th Percentile (4,240 Attendees)		1,230
95th Percentile (5,800 Attendees)		1,690
Fair (2017)		
50th Percentile (46,870 Attendees)	0.085	3,990
85th Percentile (56,170 Attendees)		4,780
95th Percentile (59,670 Attendees)		5,080

When comparing the parking demand estimates in **Table 2-4** to the off-street parking supply estimated for Hastings Park of 2,502 during Playland and 3,710 during the Fair, it is found that:

- The existing off-street parking supply is generally able to meet the demand generated by Playland during the regular season;
- The existing off-street parking supply is not able to meet the demand generated by the 15-day Fair; and
- The limited parking supply appears to restrict demand parking demand during the 15-day Fair

Discussion of Fair Off-Street Parking Demand

When estimating the existing off-street parking demand during the Fair, it is important to note that the 50th, 85th, and 95th percentile demand calculations do not necessarily mean that off-street parking demand is met at these values, as the existing off-street parking demand during the Fair is restricted by supply. This restricted parking supply is likely resulting in transportation mode shifts by the Fair's visitors.

The Playland parking demand rate of 0.29 spaces per attendee can be considered closer to unrestricted demand, as data were collected on a day when off-street parking was not fully utilized; therefore, it is assumed that the majority of visitors who wanted to find a parking space on-site were able to do so. During the Fair, nearly all of the available off-street parking supply was utilized until the Hastings Racetrack infield was opened; therefore, the rate of 0.085 spaces occupied per attendee during the Fair survey is restricted by the off-street parking supply.

The difference in off-street parking demand per attendee identified during Playland and the Fair also highlights that the limited off-street parking supply does not necessarily impact attendance. On Tuesday, August 29, 2017, attendance records indicated that Hastings Park had 64,439 attendees over the course of the day. In comparison to the off-street parking supply, this is 0.06 off-street parking spaces per attendee. This finding indicates that visitors who might typically drive to Hastings Parks are managing to attend the Fair by shifting their travel patterns to alternative modes accordingly.

2.1.6 Existing Parking Conditions at Hastings Park Conclusions

The findings of the off-street and on-street parking surveys regarding the existing parking conditions at Hastings Park during Playland and the Fair are summarized as follows:

- The on-street parking available near Hastings Park is a combination of restricted (residential reserved) and unrestricted parking
- On-street parking demand was identified to be minimal during the Playland survey; however, 391 vehicles in the study area were assumed to be generated by Hastings Park during the Fair survey.
- The existing off-street parking supply for Hastings Park is approximately 2,502 spaces during Playland, and 3,710 spaces during the Fair, inclusive of the Hastings Racetrack infield parking lot.
- The existing parking supply is likely able to meet demand on most days of Playland's regular season based on its existing size and operation.
- The existing off-street parking supply available during the 15-day Fair is not sufficient to meet the parking demands of the Fair.
- Comparing the peak parking demand per attendee of 0.29 during Playland, and 0.085 during the Fair, the peak parking demand of 0.085 during the Fair is not the true parking demand in that it is limited by the parking supply within the study area.

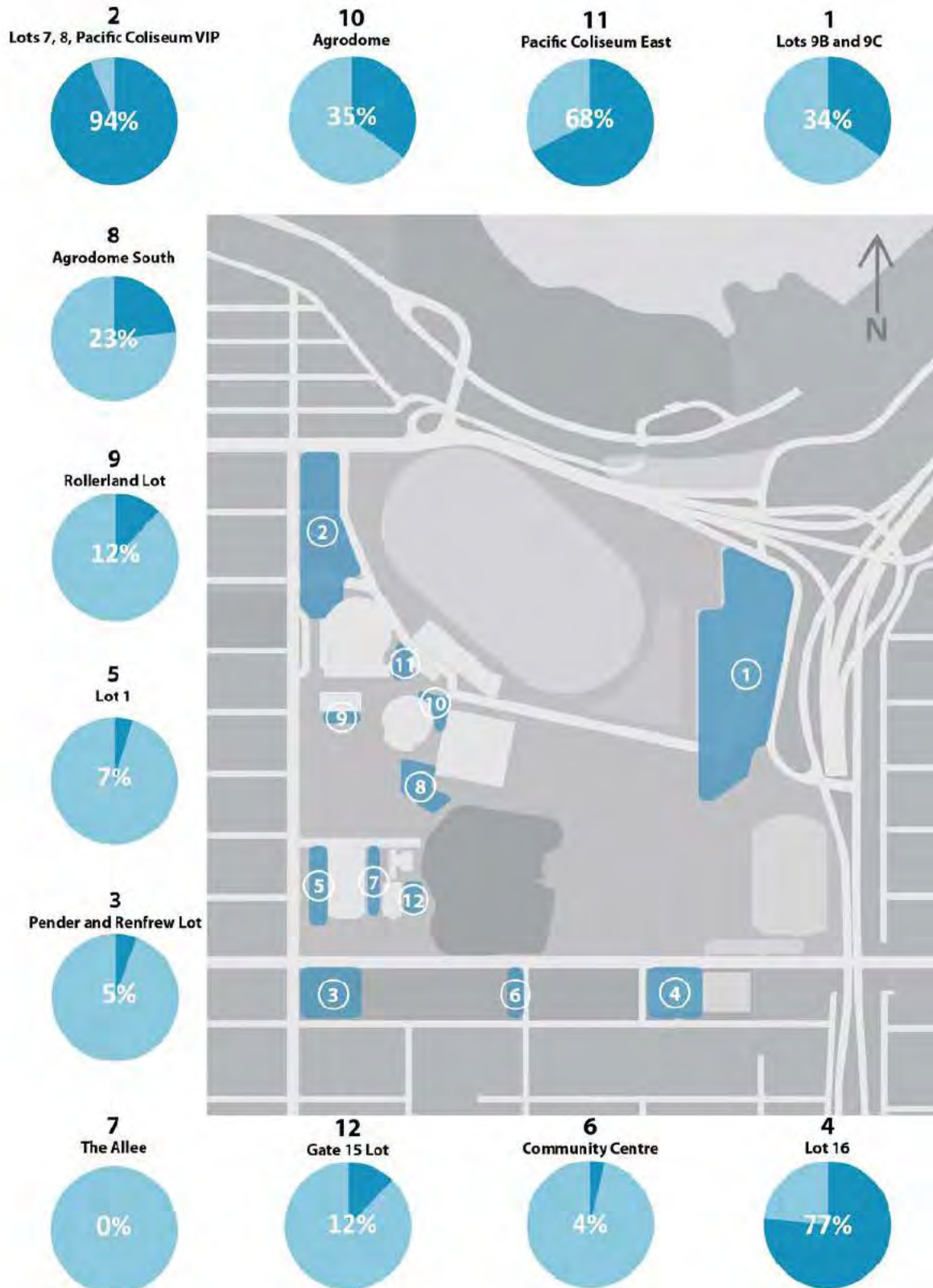


Figure 2-7: Utilization of Off-Street Parking Lots at Peak Demand (Playland) (Source: TransTech)



Figure 2-8: Utilization of Off-Street Parking Lots at Peak Demand (Fair) (Source: TransTech)

2.2 Future Parking Conditions at Hastings Park

The planned expansion of Playland is expected to impact the off-street parking supply at Hastings Park and increase attendance throughout its 108 days of operation. However, reducing the off-street parking supply is a consequence of the Playland expansion and therefore parking supply is anticipated to decrease while demand increases.

In this section, the future parking demand generated by Hastings Park is estimated based on projected 2029 attendance rates provided by the PNE, existing parking demand estimates, and anticipated mode shifts that are expected to influence off-street parking demand. After gaps in future parking supply and demand are identified, options for meeting anticipated off-street parking deficiencies are described.

2.2.1 Future Parking Demands at Hastings Park

The general methodology used to estimate Hastings Park future parking demand are as follows:

1. Determine existing Hastings Park daily attendance rates during Playland regular season and the 15-day Fair from the attendance data provided by the PNE.
2. Estimate existing Hastings Park parking demand from the on-street and off-street parking surveys.
3. Estimate 2029 daily attendance during Playland and the Fair based on attendance projections provided by the PNE.
4. Estimate 2029 parking demand based on 2029 attendance estimates and peak parking demand per attendee rate calculated for Playland and the Fair.
5. Apply appropriate mode shift reduction target to 2029 parking demand estimates.

Estimated parking demand for Hastings Park during Playland and the Fair in 2029 have been calculated in **Table 2-5** with no target reduction in parking demand; in addition, target parking demand reduction at 5%, 10%, and 15% are also estimated. The target parking demand reduction corresponds to the assumed effects regional mode shifts and TDM strategies will have on overall off-street parking demand by 2029.

Parking Demand Estimates for Playland in 2029

The expansion of Playland is estimated to increase attendance approximately 50% to 637,000 visitors annually by 2029. Based on this expected increase and Playland’s existing 50th, 85th, and 95th percentile attendance, the estimated 2029 Playland daily attendance is shown **Figure 2-9**.

The peak parking demand rate for the existing Playland scenario in **Table 2-3** has been applied to the projected attendance rates for Playland in 2029 shown in **Figure 2-9**. Based on the existing and projected attendance numbers in and the peak parking demand of 0.29 spaces per attendee calculated in **Section 2.1.5**, the estimated off-street parking demands of Playland in 2029 are calculated in **Table 2-5**.

Parking Demand Estimates for the Fair in 2029

The projected attendance of 850,000 annual Fair attendees is an 18% increase over existing conditions. Based on this expected increase and Playland’s existing 50th, 85th, and 95th percentile attendance, the projected daily Playland attendance in 2029 is shown in **Figure 2-10**.

The peak parking demand rate for the existing Fair scenario in **Table 2-3** has been applied to the projected attendance rates for Playland in 2029 shown in **Figure 2-10**. Based on the existing and projected attendance numbers in **Figure 2-10** and the peak parking demand of 0.85 spaces per attendee calculated in **Section 2.1.5**, the estimated off-street parking demands of the Fair in 2029 are calculated in **Table 2-5**.

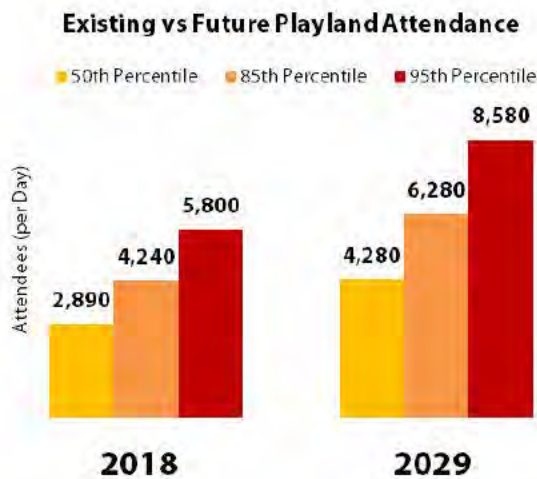


Figure 2-9: Comparison of Existing vs 2029 Playland Attendance

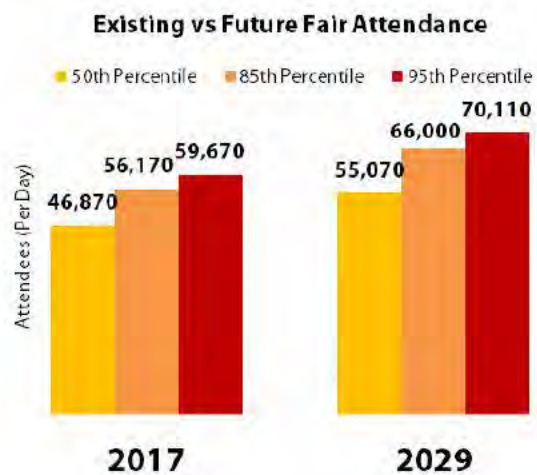


Figure 2-10: Comparison of Existing vs 2029 Fair Attendance

Table 2-5: Estimated Off-Street Parking Demand During Playland and the Fair in 2029

2029 Daily Attendance Rate	Peak Parking Demand Per Attendee	2029 Parking Demand			
		(No Target Reduction)	(5% Target Reduction)	(10% Target Reduction)	(15% Target Reduction)
2029 Playland					
50th Percentile (4,280 Attendees)	0.29	1,240	1,180	1,120	1,050
85th Percentile (6,280 Attendees)		1,830	1,740	1,650	1,560
95th Percentile (8,580 Attendees)		2,490	2,370	2,240	2,120
2029 Fair					
50th Percentile (55,140 Attendees)	0.085	4,680	4,450	4,210	3,980
85th Percentile (66,090 Attendees)		5,610	5,330	5,050	4,770
95th Percentile (70,200 Attendees)		5,960	5,660	5,360	5,070

Values rounded to nearest 10

Future Mode Shift and Reduction of Parking Demand

As the City and Metro Vancouver continue to target a general mode shift away from personal automobile, it can be anticipated that trends in Hastings Park travel patterns will also see a reduction in the personal automobile's mode share. Additionally, Transportation Demand Management (TDM) strategies, as discussed further in **Section 5**, may also be implemented to encourage a reduction in parking demand.

Detailed discussion of parking demand reduction target rationale is provided in **Appendix E: Mode Shift Reduction Methodology**, but it is generally based on:

- City and Metro Vancouver's 2040 mode shift targets;
- The existing high transit mode share of Hastings Park visitors;
- The anticipated introduction of ride hailing; and
- Identified TDM opportunities (See **Section 5**).

With these in mind, it is recommended that a **15% reduction in overall parking demand** be targeted when designing a parking strategy for the redevelopment of Hastings Park. Although this might be considered an aggressive target, it is consistent with both City of Vancouver and Metro Vancouver targets, and the context of Hastings Park as a site where mode choice is heavily influenced by parking supply.

2.2.2 Identifying Gaps Between Future Parking Demand and Supply

Before options can be considered for meeting future parking demands at Hastings Park, it needs to be understood how much of the existing parking supply is expected to remain following park redevelopment. This remaining supply can be considered the **baseline parking supply**, and is estimated for both Playland’s regular season and the Fair based on the following assumptions:

- Up to 1,200 vehicles will continue to be parked in the Racetrack infield during the 15-day Fair;
- The use of the two nearby elementary schools for staff parking during the Fair will also continue;
- Parking Lots 9B and 9C will be fully removed as part of the expansion of Playland;
- Several smaller lots on the Hastings Park site will be removed as part of redevelopment; and
- An estimated 200 additional parking spaces will be provided adjacent to parking lot 7 in the location of the existing Tech Services Buildings.

As the baseline parking supply is expected to continue to vary with site programming, anticipated gaps in parking supply and demand are calculated for both 2029 Playland and Fair scenarios. Once these baseline inventories are identified, the gap between future baseline supply and demand are evaluated.

2029 Baseline Parking Supply

Based on the outlined parking inventory assumptions, the baseline parking supplies for both the 2029 Playland and Fair scenarios are estimated in **Table 2-6**.

Table 2-6: 2029 Baseline Parking Supply at Hastings Park

Parking Lot	Playland Inventory	Fair Inventory
Pender & Renfrew	354	354
Lot 16	277	277
Lot 1	55	55
Community Centre	28	28
7, 8, Pacific Coliseum	571	571
Racetrack Infield	-	1,200
Staff - Hastings	-	100
Staff - Dr. A.R. Lord	-	208
Tech Services Lot (New)	200	200
2029 Baseline Supply:	1,490	2,990

Baseline supply rounded to nearest 10

Gaps Between Baseline Parking Supply and Future Demand

The anticipated gaps between baseline parking supply in **Table 2-6** and 2029 parking demand estimates calculated in **Table 2-5** are compared in **Table 2-7**.

Generally, these baseline parking shortfalls indicate that the baseline parking supply after Playland expansion would not be sufficient for meeting anticipated 2029 demand during Playland and the Fair, even with a 15% target reduction in parking demand.

Table 2-7: Estimated 2029 Parking Surplus (Shortfall).

2029 Daily Attendance Rate	Baseline Parking Supply	2029 Parking Surplus (Shortfall)			
		(No Target Reduction)	(5% Target Reduction)	(10% Target Reduction)	(15% Target Reduction)
2029 Playland					
50th Percentile (4,350 Attendees)	1,490	250	310	370	440
85th Percentile (6,350 Attendees)		(340)	(250)	(160)	(70)
95th Percentile (8,750 Attendees)		(1,000)	(880)	(750)	(630)
2029 Fair					
50th Percentile (55,280 Attendees)	2,990	(1,690)	(1,460)	(1,220)	(990)
85th Percentile (66,260 Attendees)		(2,620)	(2,340)	(2,060)	(1,780)
95th Percentile (70,400 Attendees)		(2,970)	(2,670)	(2,370)	(2,080)

Values rounded to nearest 10

Recommended Off-Street Parking Supply Targets

It is recommended that the PNE target providing enough off-street parking supply to meet the at minimum the **50th percentile parking demand during the 15-Day Fair, and 95th Percentile parking demand during Playland in 2029**. This recommendation is based on the understanding that Hastings Park is meeting approximately the 50th percentile parking demand during the Fair under existing conditions and targeting this percentile demand in the future means *targeting that parking conditions during the Fair to remain similar to existing*.

With a 15% parking demand reduction target, this means targeting to supply:

- a minimum of 2,120 off-street parking spaces during Playland; and
- a minimum of 3,980 off-street parking spaces during the Fair.

Options for meeting these off-street parking supply targets are discussed in the following sections.

2.3 Options for Meeting Future Parking Demand at Hastings Park

Through discussion with the PNE, three parking structure options have been considered to meet the future parking demands of Playland and the Fair. The parking structure options are explored due to the existing site constraint in providing more parking supply while supporting the proposed redevelopment plans, including the expansion of Playland:

- Option 1: A parkade in the northwest corner of the site that meets the target 2029 Fair parking supply
- Option 2: A parkade is constructed in the existing location of Lot 16 that meets the target 2029 Fair parking supply; and
- Option 3: A phased approach to first meet the parking demand of Playland on Opening Day, and a second phase to meet the long-term target parking demand of the Fair, if required.

2.3.1 Option 1: Parking in Northwest Corner Replaced with Parkade

Option 1 would replace the existing surface parking in the northwest corner of Hastings Park, currently parking lots 7 and 8, with a parkade. Removing lots 7 and 8 would reduce the surface parking available at Hastings Park from the baseline supplies estimated in **Table 2-6** to 714 spaces during Playland and 2,219 spaces during the Fair.

Required Parkade Size

This study estimates that if all surface parking in the northwest corner was removed, a **three-level parkade** with approximately 655 spaces per level would be required in the northwest corner to meet target parking supply for the Fair demand in 2029. This approach assumes that each level of the parkade can provide 85% of the existing surface parking spaces it is displacing, discounting the areas that would be lost to construct parkade with the necessary ramps and columns. This is a high-level estimate only as no conceptual design has been contemplated for the proposed parkade during this study.

It is estimated that a three-level parkade with 655 spaces on each level would provide approximately 1,965 spaces, bringing the off-street parking supply total to 4,184 spaces during the Fair and 2,684 spaces during Playland.

Comparing this parking supply to the demand

estimates in **Table 2-5**, this would meet the target Fair parking demand in 2029 with a surplus of 204 parking spaces, and meeting the target Playland parking demand with a surplus of 564 parking spaces. The comparisons in parking demands and supplies for Option 1 are summarized in **Table 2-8** for both Playland and the Fair scenarios.



Figure 2-11: Option 1 Parkade in northwest corner of Hastings Park

Table 2-8: Option 1 Estimated Parking Supply vs 2029 Demand Targets

Option 1	Baseline Parking Supply	3-Level NW Parkade Supply	Parking Demand	Parking Surplus (Shortfall)
Playland	719	1,965	2,120	564
Fair	2,219	1,965	3,980	204

2.3.2 Option 2: Lot 16 Replaced with Parkade

Option 2 would replace the existing surface parking in Lot 16, including the existing portion of the property reserved for the E-Comm building, with a parkade. Removing Lot 16 would reduce the surface parking available at Hastings Park from the baseline supplies estimated in **Table 2-6** to 1,213 spaces during Playland and 2,713 during the Fair.

Required Parkade Size

This study estimates that if all surface parking in Lot 16 and the adjacent E-Comm lot was removed, a **four-level parkade** with approximately 371 spaces per level would be required to meet the target parking supply for the Fair in 2029. This approach assumes that each level of the parkade can provide 85% of the existing surface parking spaces it is displacing, discounting the areas that would be lost to construct parkade with the necessary ramps and columns. Further, this study assumes that the proposed parkade would need to provide the same number of parking spaces for the E-Comm building that it currently has next to Lot 16.

It is estimated that a four-level parkade with 371 spaces per level would provide approximately 1,324 additional parking spaces (not including the assumed 160 parking spaces to be designated for the E-Comm building) for Hastings Park, bringing the off-street parking supply to 4,037 spaces during the Fair and 2,537 spaces during Playland.



Figure 2-12 Option 2 4-Level Parkade in Location of Lot 16

Comparing this parking supply to the demand estimates in **Table 2-5**, This would meet the target Fair parking demand with a surplus of 57 parking spaces, and meeting the target Playland parking demand with a surplus of 417 parking spaces. The comparisons in parking demands and supplies for Option 2 are summarized in **Table 2-9** for both Playland and the Fair scenarios.

Table 2-9: Option 2 Estimated Parking Supply vs 2029 Demand Targets

Option 2	Baseline Parking Supply	4-Level Lot 16 Parkade	Parking Demand	Parking Surplus (Shortfall)
Playland	1,213	1,324	2,120	417
Fair	2,713	1,324	3,980	57

Note: Approximate 160 parking spaces reserved for E-Comm not included in parkade inventory

2.3.3 Option 3: Phased Parkade Construction in Lot 16 and Northwest Corner

The findings in the Option 1 and Options 2 scenarios showed that any parkade designed to meet the target parking supply during the Fair would result in a considerable parking surplus during the regular Playland season. Although it would be ideal to meet the target parking supply for the Fair at Hastings Park on opening day, this option considers the following risks if a parking structure is designed to accommodate the target Fair parking demand in 2029:

- 2029 parking demand during the Fair is based on the projected 2029 attendance. There is a degree of uncertainty with the projections, and how the redevelopment of Hastings Park will influence Fair attendance.
- This study recommended a target of 15% reduction of overall parking demand by 2029; however, there is also uncertainty in how the transportation patterns will evolve in the future with the continual changes in land use and transportation modes available in the region. Based on the on-going observations made by various municipalities and roadway agencies, regional travel patterns are changing in that the local population is reducing the dependency on personal automobiles. It is expected that this trend would continue and reduce the parking demands at Hastings Park during Playland and the Fair to meet the Master Plan's objectives; however, it is difficult to estimate the reduction and the 15% target was chosen to be consistent with the City's and Metro Vancouver's mode shift targets. There are other opportunities that may further affect transportation demands such as ride-hailing, ride-sharing, and mass public transit.
- The scenarios have made several assumptions about parking supply. It has been assumed that the Racetrack infield will continue to accommodate vehicles during the Fair, having the two elementary schools for staff parking during the Fair, and maintaining the existing parking lot for the adjacent Hastings Community Centre that may also be redeveloped in the future. These assumptions will need to be confirmed in the coming years and the parking provision targets at Hastings Park may need to be updated accordingly.



Figure 2-13: Option 3 Phased Parkade Construction in Lot 16 and Northwest Corner

With consideration given to the aforementioned uncertainties, Option 3 proposes a phased parking strategy at Hastings Park to effectively deliver the TDM suggestions and minimize the over-supply of parking spaces on-site. Phase 1, a near-term strategy, would aim to provide enough parking to support demand on the opening day of the Playland expansion, and would provide opportunity to undertake additional parking analysis before Phase 2 is carried out to accommodate the long-term parking demands of Hastings Park.

Option 3 Phase 1 (Near-Term): Accommodate Playland Parking Demand with a Lot 16 Parkade

This phase targets meeting the immediate parking demands on the opening day of the Playland expansion throughout its 93 days of operation without the Fair. A structured parking would still be required at Lot 16; however, it is expected to be smaller than the parking structures proposed in Option 1 or Option 2.

Based on the following considerations, Lot 16 would be more ideal for the Phase 1 parkade than the northwest corner of the park as:

- The proposed parkade at Lot 16 would be closer to Playland than the northwest corner of the park (Lot 7 and 8), which is the major driver of parking demand at Hastings Park during the regular season.
- It retains more surface parking at Hastings Park in comparison to replacing Lot 7 and 8 with a northwest parkade. Retaining as much surface parking as possible is preferred as it carries lower operating and maintenance costs than a parkade.
- The approach is flexible by reserving the northwest corner of the park for Phase 2 of the parking strategy if it is deemed required in the future.
- This option provides more opportunity to use the parkade as a park-and-ride facility during the off-season when neither Playland nor the Fair is operating due to its proximity to frequent transit services that are operating on or near Hastings Street, including the nearby Kootenay Bus Loop.

It is estimated that a parkade in the existing Lot 16 location could accommodate about 371 spaces per level with the same assumptions in that only 85% of the existing at-grade parking supply could be accommodated on each parkade level due to ramps and columns within the structure. The proposed parkade also assumes that 160 parking spaces would need to be maintained for the E-Comm building. Based on these considerations, a **three-level parkade** with a total of 954 spaces would be required to meet the forecast Playland parking demand on opening day with a Lot 16 parkade. The proposed three-level parkade would bring the total parking supply at Hastings Park to 3,666 spaces during the Fair, and 2,166 during Playland. This would meet the target Playland parking demand with a surplus of 46 parking spaces, but a shortfall of 314 parking spaces during the Fair. This approach may be acceptable based on the following:

- The existing off-street parking supply during the Fair is 3,710 spaces; thus, the proposed 3,666 parking supply on opening day (Phase 1) is similar to the existing supply,
- The target parking demand during the Fair is estimated for 2029 at the target capacity, but the opening day attendance may not be reaching capacity yet; and
- The Fair only takes place 15 days annually whereas Playland operates 93 days per year.

Table 2-10: Option 3 Estimated Parking Supply vs 2029 Demand Targets

Option 3	Baseline Parking Supply	3-Level Lot 16 Parkade	Parking Demand	Parking Surplus (Shortfall)
Playland	1,213	953	2,120	46
Fair	2,713	953	3,980	(314)

Note: Approximate 160 parking spaces reserved for E-Comm not included in parkade inventory

Option 3 Phase 2 (Long-Term): Expand Parking Supply in Northwest Corner

Phase 2 would involve increasing the parking supply at Hastings Park following the opening day of the Playland expansion. Phase 2 of a phased parking strategy should aim to accommodate the long-term parking demands of Hastings Park throughout the year, including the Fair.

The Phase 2 parking strategy would need to be considered after careful re-evaluation of the long-term needs of Hastings Park when there is a better understanding of the overall redevelopment, changes to attendance at Playland and the Fair, changing regional travel patterns, and any changes to parking supply assumptions. Any changes to the assumed surface parking supply at Hastings Park would require updates to the parking estimates summarized in this study.

Assuming that a three-level parkade has been constructed in Lot 16 as part of the short-term Phase 1 parking strategy, Phase 2 would see the provision of a two-level parkade in the northwest corner. Assuming that the proposed parkade in the northwest corner of Hastings Park could provide about 655 spaces per level and that it would replace all surface parking in that location, it would bring the overall parking supply at Hastings Park to 2,705 spaces during Playland and 4,203 spaces during the Fair, inclusive of the Phase 1 parkade at Lot 16.

Table 2-11: Parking Surplus and Shortfall during Phase 2 of Option 3

Option 3	Baseline Parking Supply	3-Level Lot 16 Parkade	2-Level NW Corner Parkade	Parking Demand	Parking Surplus (Shortfall)
Playland	442	953	1,310	2,120	585
Fair	1,942	953	1,308	3,980	223

Note: Approximate 160 parking spaces reserved for E-Comm not included in parkade inventory

2.4 Recommendations

It is recommended that the phased approach of **Option 3** be considered to meet the short- and long-term parking demands of Hastings Park. This recommendation is based on providing a three-level parkade in Phase 1 to meet the immediate parking demands generated by the Playland expansion, and proceeding with a Phase 2 parking structure in the northwest corner as required to meet the long-term parking needs of year-round programming at Hastings Park including the 15-day Fair.

Phase 1: Near-Term Parking Strategy

For Phase 1 of a phased parking strategy, this recommends that a three-level parking structure with approximately 950 parking spaces be considered in the existing location of Lot 16 and the adjacent E-Comm parking lot. A parkade of this size would provide an off-street parking supply of approximately:

- 2,166 spaces during Playland (953 spaces in a lot 16 parkade, 1,213 surface spaces)
- 3,666 spaces during the Fair (953 spaces in lot 16 Parkade, 2,713 surface spaces)

Phase 2: Long-Term Parking Strategy

Based on the preliminary estimates on what would be required to meet the long-term parking demands of Hastings Park, a two-level parkade may be required in the northwest corner of Hastings Park. Since the projected parking demand and supply estimates for Hastings Park will continue to evolve and with it the sizing and inventory requirements of any structure completed in Phase 2, this study recommends frequent monitoring of the TDM strategies between Phase 1 and Phase 2 to further reduce on-site parking demands and to minimize the need to construct the Phase 2 parkade.

3 Access

3.1 Vehicle Access

The Master Plan discusses the challenges associated with the existing gate locations, in particular, how incremental growth of the park and overlapping uses has resulted in numerous minor accesses scattered throughout the perimeter of the park, with vehicle routing crisscrossing the existing site. These minor gates are left open for a large portion of the year resulting in uncontrolled vehicle movements throughout the park. The redevelopment of Hastings Park is an opportunity to consolidate these accesses and vehicle routes, which will create a safer and more cohesive Hastings Park.

3.1.1 Existing Vehicle Access Locations

The existing accesses to Hastings Park are shown in **Figure 3-1**, with the numbering of gate descriptions below corresponding to the numbering of the figure.

Major Vehicle Access Points

1. **Gate 6** ties into the intersection of North Renfrew Street and Cambridge Street. This gate provides access to parking lot 7 and lot 8, and the internal road Miller Drive;
2. **Gate 9** is located on the east side of the Park at Bridgeway Street. This gate provides access to parking lots 9B and 9C, and the internal road Miller Drive.

Minor Vehicle Access Points

3. This unnamed gate is a right-in/right-out only access on the north side of the park at McGill Street. Based on existing parking maps, it is assumed that this gate is not typically open during the Fair;
4. **Gate 4** is a minor vehicle access on the west side of the site that ties into the intersection of North Renfrew Street and Dundas Street. This gate provides access to the Rollerland and the Agrodome;
5. **Gate 2** is a minor vehicle access on the west side of the park. This gate provides access to Accessibility Parking Lot 1, the PNE Forum and Circus West;
6. **Gate 15** is a minor vehicle access on the south side of the park from East Hastings Street. This gate provides access to the back-of-house parking east of Circus West;
7. **Gate 12** is a minor vehicle access on the south side of the park from East Hastings Street. This gate provides access to the Empire Fields Parking lot via a one-way inbound driveway on the west side of the lot, and a one-way outbound driveway on the east side.



Figure 3-1: Existing Vehicle Accesses at Hastings Park

3.1.2 Opportunities to Consolidate Driveway Access

The Master Plan's proposed internal vehicular routing and organization, shown in **Figure 3-2**, aims to create a clear pedestrian and vehicle organization by consolidating parking and vehicle accesses in the northern side of the park, with the exception of a few minor lots retained in the southern portion. The future access locations contemplated in the Master Plan are shown in **Figure 3-3** are discussed in the sections below.



Figure 3-2: Future Hastings Park Vehicular Routes and Parking Areas. (Hastings Park - PNE Master Plan)

Proposed Major Vehicle Access Points

The points discussed in the following sections correspond to the numbered locations in **Figure 3-3**.

1. **Gate 6** is anticipated to remain in the same location as existing, tying into the intersection of North Renfrew Street and Cambridge Street. This gate would be the primary access all parking in the northwest corner of the park, and the internal road Miller Drive.

If the off-street parking supply in the northwest corner of Hastings Park is anticipated to increase, **geometric upgrades at this intersection should be considered** in anticipation of the increased inbound and outbound vehicle movements in the future. These improvements could include a traffic signal, left-turn storage lanes, and right-turn storage lanes for the southbound left-turn and northbound right-turn traffic into Hastings Park.

Proposed Minor Vehicle Access Points

2. With the expansion of Playland and elimination of parking lots 9B and 9C, this location will no longer be required as a major vehicle access point. As indicated by the Master Plan, this access will be retained as a minor access for back-of-house and emergency vehicles.
3. This unnamed gate is proposed as a primary vehicle access in the Master Plan. Due to its proximity to the North Renfrew Street and McGill Street intersection, this access should be considered as a minor access with movements restricted to right-in/right-out, or outbound right-out, only.
4. It is anticipated that the consolidation of parking in the Hastings Park redevelopment would result in this access no longer being required, however, it may be retained for emergency or transit vehicles.
5. Based on the Master Plan, it is anticipated that Parking Lot 1 will remain as existing, and this location will remain as a minor vehicular access for this lot.

7. Based on the Master Plan, this location will remain as a minor access for the Empire Fields parking lot.
6. The location indicated at the intersection of McGill Street and Commissioner Street was indicated in the Master Plan to be a potential location for vehicular access to Hastings Park. It is assumed that this location would be considered as an access if a parking structure is constructed within the Hastings Racetrack infield. If the racetrack infield structure is not anticipated as part of the Hastings Park redevelopment, a minor access at this location should be considered if:
 - The future vehicular demand put on Gate 6 as the only primary visitor parking access cannot be accommodated with geometric upgrades; or
 - The access location indicated in location 3 cannot be accommodated due to its proximity to the North Renfrew Street and McGill Street intersection.
8. This location is proposed as a primary vehicle access in the Master Plan. This location would be appropriate for a primary access if a parking structure is to be provided within the Hastings Racetrack infield, which would reduce the vehicular demand that would result from Gate 6 being the only primary vehicular access. If a parking structure within the infield is not constructed, this location could remain as a minor access that is restricted for back-of-house access and emergency vehicles.
9. Location 9 is a proposed vehicle access in the Hastings Park Master Plan. This location should only be considered if providing a parking structure within the racetrack infield.



Figure 3-3: Future Vehicle Access Locations following the Redevelopment of Hastings Park (Source: Hastings Park-PNE Master Plan)

3.2 Pedestrian and Cycling Access

Based on the information provided in the Master Plan, the redevelopment of Hastings Park plans to provide a total of 5.4 kilometers of pedestrian and bicycle routes through the park. The routes proposed in the Master Plan, shown in **Figure 3-4**, propose to:

- Create a pedestrian and bicycle connection to New Brighton Park;
- Provide east-west and north-south active transportation corridors that bisect the park and connect to city-wide greenways;
- Encircle Hastings Park with separated pedestrian and bicycle routes;
- Introduce traffic calming to Renfrew Street to accommodate a Park Perimeter Greenway and shorten crossing distances on local streets and creating “gateways” to the Park.



Figure 3-4: Pedestrian and Cycling Routes and Connections at Hastings Park (Master Plan)

3.3 Recommended Changes to Park Access

Based on the options provided in the Hastings Park Master Plan, the following accesses as indicated in **Figure 3-3** are recommended:

- If parking supply in the northwest corner of the site increases significantly, provide major vehicular access at **location 1**. Consider geometric upgrades including a semi-actuated signal, southbound left-turn storage lane, and northbound-right turn storage lane;
- Provide a minor vehicular access at **location 3**. Consider restricting movements to right-in/right-out, or relocate the access further east of McGill Street and North Renfrew Street intersection;
- Provide minor visitor vehicular access at **locations 5 and 7**;
- Provide back-of-house and emergency vehicle access at **locations 4, 2 and 8**.

The prior recommendations assume that no parking structure is provided under the Hastings Racetrack infield. If the business case for a racetrack infield parking structure is met:

- Consider shifting minor access at **location 3** east to tie in with the Commissioner Street and McGill Street intersection as a full-movement access; or
- Consider providing a major pedestrian-vehicular access at **location 8**.
- Consider providing a major vehicular access at **location 9**.

Providing a secondary major vehicular access for park visitors at location 3, location 8, or location 9 would alleviate some the demand on the proposed major access at location 1, and the intersections of North Renfrew Street with McGill Street and East Hastings Street.

4 Traffic

4.1 Surrounding Road Network Traffic Volumes

Existing traffic volumes for the study intersections were provided by the City. For the intersections where data was not available, turning movement data were collected by TransTech on August 26, 2017 at the following intersections:

- North Renfrew Street and Dundas Street;
- Cassiar Connector and Bridgeway Street; and
- East Hastings Street and North Renfrew Street.

Collecting traffic data during the Fair at the PNE was done in order to capture the peak demand of Hastings Park site generated traffic on the surrounding road network. The study intersection traffic data provided by the City include:

- Cassiar Connector and East Hastings (2017);
- North Renfrew Street and McGill Street (2016);
- East Hastings and Windermere Street (2013);
- North Renfrew Street and East Hastings (2013);
- North Renfrew Street and Pandora (2013).

For the purpose of this study, the intersection turning movement data provide by the City were balanced on the study road network based on the TransTech turning movement intersections. The existing (balanced) traffic volumes for the Saturday peak hour are summarized in **Figure 4-1**. The existing laning configuration for the study road network is shown in **Figure 4-2**.

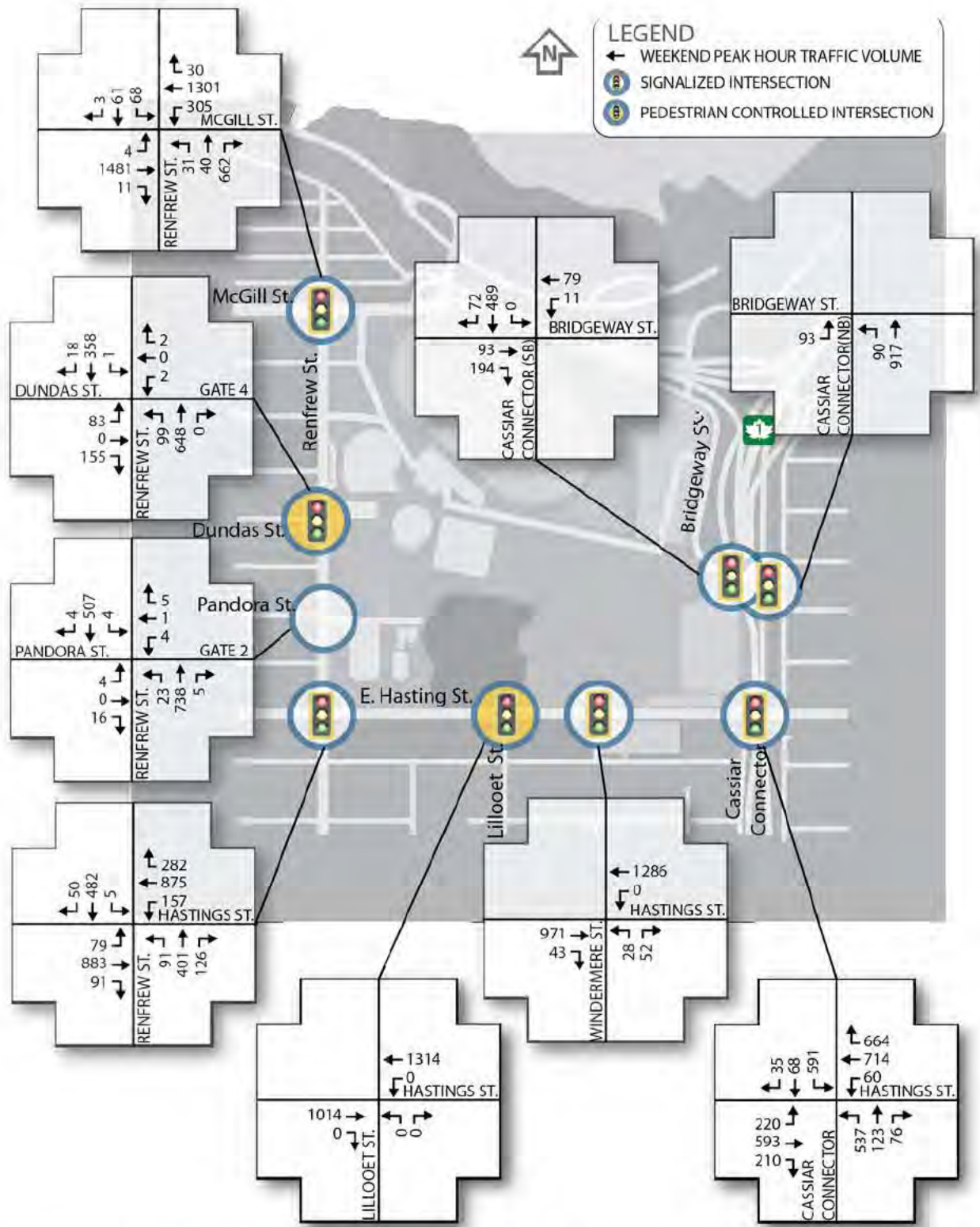


Figure 4-1: Existing Traffic Volumes at Study Intersections (City and TransTech)

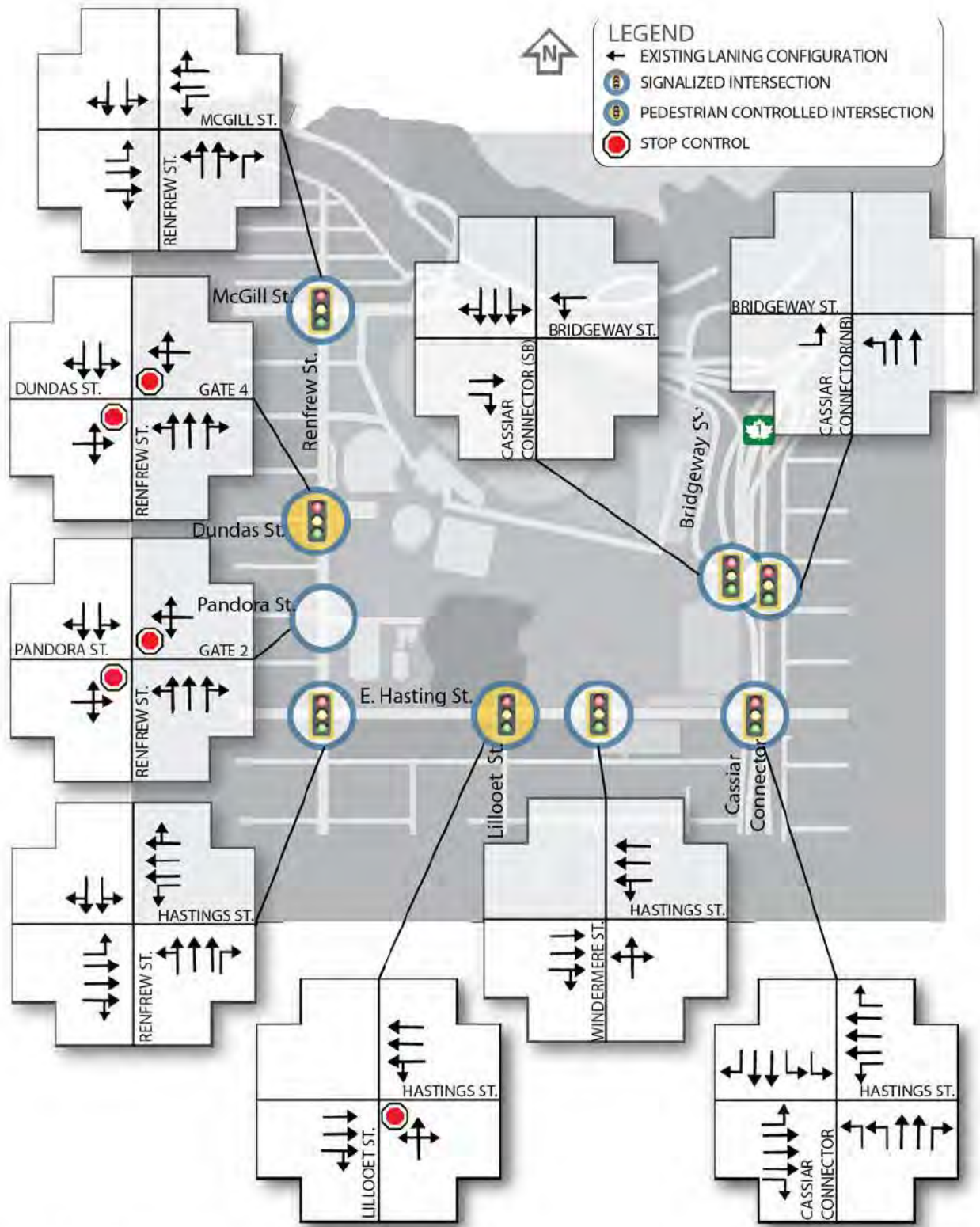


Figure 4-2: Existing Laning Configuration at Study Intersections

4.2 Traffic Operation Analysis Methodologies

The traffic operation analysis in this study is performed using the Synchro 9 software suite for all signalized and unsignalized intersections. The software analyzes traffic operations based on the Highway Capacity Manual (HCM) methodologies. The City provided Binnie with the current signal timing plans for the study intersections, which were considered for the analysis of existing traffic operations of the study road network. The traffic operation analyses for the horizon year scenarios were performed based on optimized signal timing plans, as required, that follow the typical City timing requirements.

The traffic operations for the horizon year background and combined conditions are assessed to estimate the volume to capacity (v/c) ratios, approach delays, level-of-services (LOS), and 95th percentile queue lengths at each study intersection.

When conducting a review of the traffic analysis results, a v/c ratio at or above 1.0 typically illustrates that traffic volumes exceed the intersection capacity. Delay, in terms of seconds, signify the wait time a driver experiences on the approach to an intersection. LOS is a grading system that categorizes the intersection operation based on the calculated delay.

Table 4-1 and **Table 4-2** show the LOS categories for signalized and unsignalized intersections respectively. Vehicles approaching an intersection with LOS A typically experiences little to no delay, whereas a vehicle approaching an intersection with LOS F will experience significant delays.

Table 4-1: HCM LOS Criteria for Signalized Intersection

Level of Service	Average Control Delay (s/veh)
A	0 - 10
B	> 10 - 20
C	> 20 - 35
D	> 35 - 55
E	> 55 - 80
F	> 80

Table 4-2: HCM LOS Criteria for Unsignalized Intersection

Level of Service	Average Control Delay (s/veh)
A	0 - 10
B	> 10 - 15
C	> 15 - 25
D	> 25 - 35
E	> 35 - 50
F	> 50

The traffic operation analysis is conducted based on the following assumed study thresholds:

- Overall intersection LOS D or better;
- Individual movement LOS D or better; and
- Individual movement v/c ratio of 0.85 or less.

4.3 Existing Traffic Operations

The evaluation of existing road networks traffic conditions has been completed using the traffic volumes summarized in **Figure 4-1**. The existing laning configuration and controls at each intersection are shown in **Figure 4-2**.

Weekend Peak Hour Traffic Operations

The **McGill Street and North Renfrew Street** intersection was found to be operating at LOS C. The maximum v/c ratio was calculated to be 0.89 for the northbound right-turn movement, which was found to be operating at LOS D.

The **East Hastings Street and Renfrew Street** intersection was found to be operating at LOS B. The maximum v/c ratio was calculated to be 0.67 for the westbound left-turn movement and shared northbound movements, which were found to be operating at LOS C.

The **East Hastings Street and Windermere Street** intersection was found to be operating at LOS A.

The **East Hastings Street and Cassiar Connector** intersection was found to be operating at LOS C. The maximum v/c ratio was calculated to be 0.78 for the eastbound left-turn movement, which was found to be operating at LOS E.

The **Cassiar Connector and Bridgeway Street** intersection was found to be operating at LOS B. A maximum v/c ratio was calculated to be 0.49 for the shared southbound movement, which was found to be operating at LOS B.

The **Dundas Street and Renfrew Street** intersection was found to be operating at LOS A. A maximum v/c ratio of was calculated to be 0.60 for the shared eastbound movements, which was found to be operating at LOS C.

The **Pandora Street and Renfrew Street** intersection was found to be operating at LOS A. The maximum v/c ratio was calculated to be 0.24 for the shared northbound movements, which were found to be operating at LOS A.

Full Synchro analysis results are provided in **Appendix F: Synchro Results** (To Be Provided).

4.4 Existing Roadway Usage

The evaluation on existing traffic conditions for the study road network was completed using the traffic volumes summarized in **Figure 4-1**. The existing laning configurations and controls at each intersection are shown in **Figure 4-2**.

Weekend Peak Hour Intersection Capacity

The existing intersection LOS and two-way volumes are shown for the study intersections in **Figure 4-3**. These intersection LOS results suggest that the study intersections are operating acceptably under existing conditions, however, it is important to note that the Synchro modelling used does not include pedestrian

volumes, which typically have a negative impact on the intersection capacity. This is of particular importance when considering the East Hastings Street and North Renfrew Street intersection, where pedestrian crossings are known to cause significant queuing for the westbound right-turn movement.

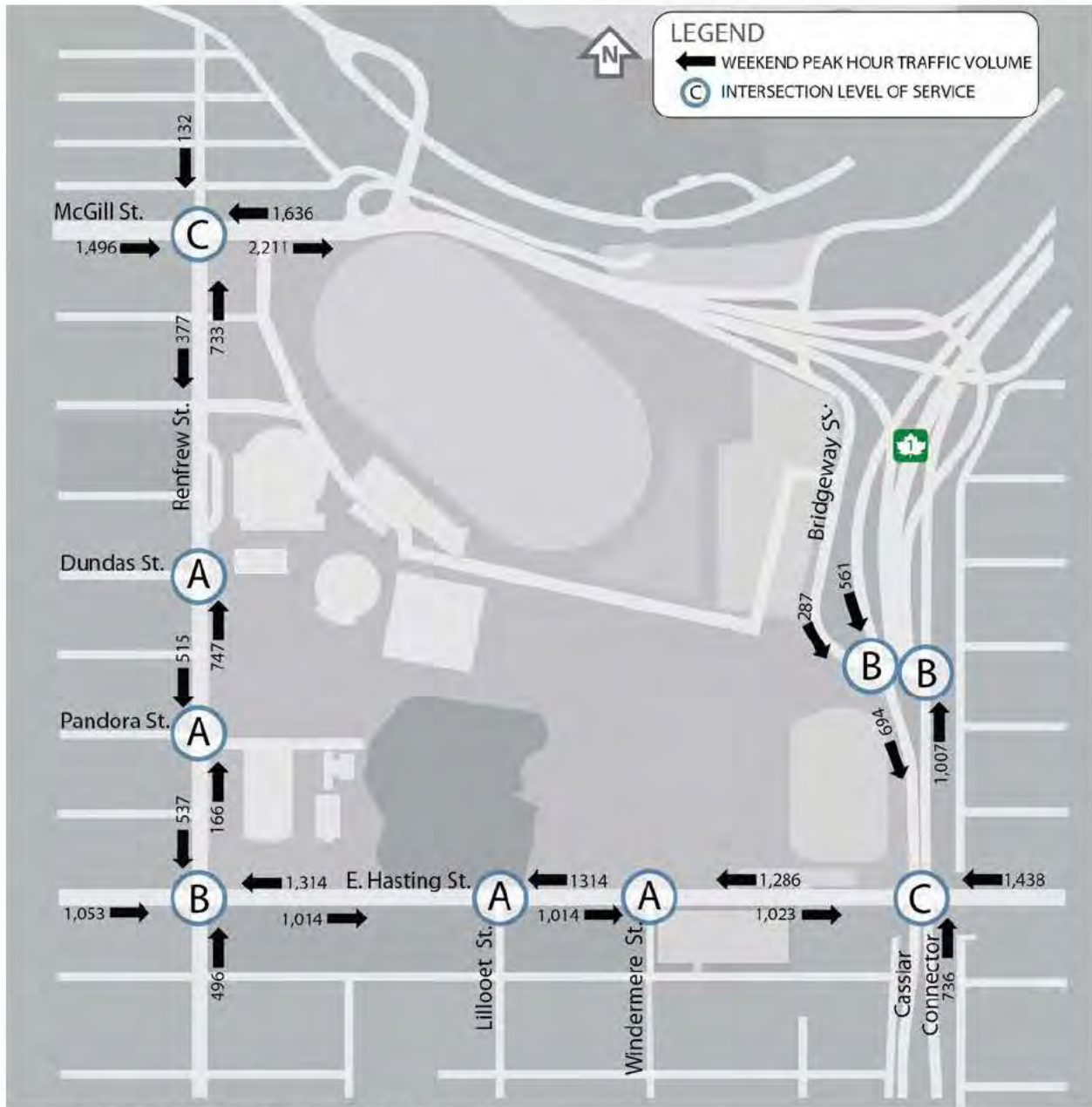


Figure 4-3: Existing Intersection LOS and Traffic Volumes

4.5 Traffic Operational Impacts of the Hastings Park Redevelopment

The proposed changes to both parking and access at Hastings Park described in the Master Plan are expected to influence which routes visitors will use to travel to and from the park. Traffic impact analysis of these changes has been limited to an evaluation of how they will impact vehicle routing on the surrounding road network.

This section provides a high-level evaluation of what impacts to traffic could be expected by the potential changes to parking and access at Hastings Park. In particular, how the proposed options for increasing parking supply at Lot 16 and the northwest corner of the park would impact vehicle routing. When plans for future parking and access at Hastings Park are finalized, the traffic impacts resulting from these changes to vehicle routing and should be further evaluated.

Lot 16 Parkade Vehicle Routing

A parkade in the existing location of Lot 16 would be expected to increase traffic volumes travelling to and from this location through nearby intersections and the surrounding neighbourhood. Based on the location of Lot 16, traffic volumes could be expected to increase at the intersection of East Hastings Street at Windermere Street, and Windermere Street at East Pender Street. Nearby residential streets may also see an increase in vehicle short-cutting, especially if the access to the parkade is provided in the same location as the existing Lot 16 driveway on East Pender Street. **Figure 4-4** shows the approximate routes vehicles traveling to or from a Lot 16 parkade would choose, which represent the routes and turning movements that could be expected to see an increase in traffic volumes.

If a parkade at Lot 16 is implemented as part of Hastings Park's future parking strategy, additional consideration should be given into:

- How to discourage short-cutting through surrounding residential streets; and
- The impacts of increased traffic volumes at nearby intersections, particularly turning movements at the intersection of East Hasting Street and Windermere Street.

Northwest Parkade Vehicle Routing

Based on the Synchro analysis results and anecdotal observations about the influence of pedestrian traffic on intersection capacity, the consolidation of visitor parking and access in the northwest corner of the site is expected to place more concentrated traffic demands at the McGill Street and Renfrew Street intersection, as well as at the East Hastings Street and Renfrew Street intersection. The key vehicle routes that could be expected based on the accesses proposed in **Section 3.1.2** are illustrated **Figure 4-5** following the proposed Hastings Park redevelopment.

If a parkade is constructed as part of the long-term parking strategy of Hastings Park, additional consideration should be given to the positioning of the primary accesses will impact nearby intersections, particularly the intersection of McGill Street and North Renfrew Street.



Figure 4-4: Potential Vehicle Routing based on Proposed Lot 16 Parkade Structure



Figure 4-5: Potential Vehicle Routing based on Northwest Parking Consolidation

5 TDM Opportunities

TDM strategies are used to promote and facilitate the use of more sustainable modes of transportation such as walking, cycling, transit, and carpooling. In the context of Hastings Park, TDM strategies can be implemented to reduce the impact of site-generated vehicle demand, off-street parking demand, and on-street parking infiltration throughout the surrounding neighborhood.

TDM strategies that may be appropriate for Hastings Park during the regular season, and additional strategies for the 15-day Fair, have been described below. There are already TDM strategies in place at Hasting Park that are only implemented during the Fair, including converting portion of the Pacific Coliseum parking lot to an off-street bus loop and increased bus frequency on some existing transit routes. Some of greatest existing challenges at Hastings Park are associated with the site-generated parking demands during the 15-day Fair, and TDM strategies will be focused on reducing that demand.

5.1 Day-to-Day TDM Strategies

TDM strategies that could be implemented year-round at Hastings Park are described below.

Encourage Ride-Sharing with Carpool-Only Lots

Creating a formal carpool-only lot, or a portion of a lot in a prime parking area such as Lot 16 or Lot 8, would encourage park visitors to share rides to and from the park to take advantage of the most desirable parking spaces on site.

Carpooling is already a popular option at Hastings Park, as indicated by the results of the intercept survey conducted during Playland and the Fair, shown in **Figure 5-1**. The results of the Playland survey conducted on July 15, 2018 indicated that 25% of persons surveyed travelled to Hasting Park with at least five persons in their car. Allocating spaces specifically for high-occupancy vehicles may encourage some persons who are travelling alone, or with smaller carpools to consolidate into larger carpools.

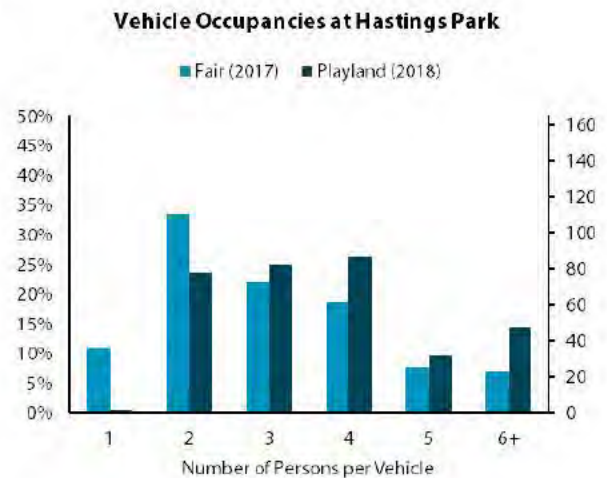


Figure 5-1: Vehicle Occupancies Indicated by Survey Respondents during the Intercept Surveys Conducted during Playland regular Season and the Fair (TransTech)

Designated Passenger Loading Areas

Based on the results of the intercept survey in **Section 1.1.2**, 7% of persons who travelled to the Fair on that day indicated they took a taxi. With this generally high taxi mode share during the Fair, as well as the anticipated introduction of ride-hailing, the passenger loading activities at Hastings Park can be expected to increase.

There are already taxi and passenger zones adjacent to Hastings Park on Renfrew Street, however there may be opportunity to provide additional pick-up and drop-off areas in off-street parking lots, such as Lot 16. Providing adequate passenger loading space for private vehicles, taxis, and future ride-hailing services will help mitigate the issues often associated with frequent pick up and drop off activity including mid-street loading, double parking, blocking bicycle and transit lanes, and on-site circulation issues. When planning for future passenger pick up and drop off activity on site, the following should be considered:

- Future passenger pick-up and drop-off demand;
- Location number of spaces required;
- Opportunity to minimize pedestrians crossing major roadways during pick-up and drop-off;
- Circulation of loading activity and safety; and
- Timing restrictions and enforcement strategies.

Bicycle Storage

Opportunities to encourage visitors to cycle to Hastings Park when designing short-term bicycle parking include:

- Providing enough bicycle parking to meet needs during Playland's regular season;
- Providing spaces near park entrances in highly visible locations;
- Providing additional amenities for short-term parking such as electrical outlets for e-bike charging and temporary storage lockers.

Redesigning Existing Surface Parking Facilities

Although this may not be considered as a natural TDM strategy, increasing the capacity of existing parking lots by maximizing the number of "small car" spaces allowable under City's off-street parking Bylaws could increase the baseline off-street parking capacity at Hastings Park. It is unknown how many of the existing off-street parking spaces are currently designated as small car spaces but maximizing the number of small car spaces on site is a low-cost opportunity to increase the capacity of existing parking lots.

The City's Off-Street Parking Bylaw (Parking Bylaw 6059) allows for 25% of off-street parking spaces on a site to be designated as "small car" spaces. Small car spaces are typically 4.6 m in length and 2.3 m in width, whereas a typical standard space is 5.5 metres in length and 2.5 metres in width.

5.2 15-Day Fair Only TDM Strategies

The following sections describe opportunities to implement TDM strategies during the increased demand associated with the 15-day Fair.

5.2.1 Transit Pass Incentives

During the intercept survey conducted at Hastings Park during the Fair on August 26, 2017, 21% of respondents indicated that they used public transit to travel to the Fair on that day. This transit mode is higher than both City of Vancouver (Panel Survey, 2016) and Metro Vancouver (Trip Diary, 2011) averages of 16% and 14%, respectively.

There are several existing TransLink routes that service Hastings Park, including:

- Route #14
- Route #16
- 95 B-Line
- Route #210
- Route #211

TransLink also provides additional busses on the existing #16 and #210 routes during the 15-day Fair.

Providing a free transit pass with the purchase of a Fair pass to Hastings Park is a potential option for encouraging transit ridership to Hastings Park without further increasing transit service. Park visitors could have the option of receiving a free transit pass when pre-purchasing a Fair pass online.

A free transit pass would be an appropriate TDM measure for reducing overall parking demand on site during the Fair, and the subsequent construction and operational costs of providing adequate off-street parking to meet that demand. If providing a free transit pass, consideration should be given into:

- How a free transit pass would influence visitor behavior and reduce off-street parking demand;
- The costs of implementing this TDM measure compared to savings of providing less off-street parking;
- The pass discount structure, and how the pass could be provided to park visitors; and
- How to integrate a free transit pass into the existing transit fair system.

5.2.3 Shuttle Service from Nearby SkyTrain Stations

Although mode intercept surveys have indicated that Hastings Park already has a high transit ridership (**Section 1.1.2**) when it comes to connecting to regional rapid-transit, Hastings Park has “last mile” challenges. In transit, the last mile problem typically refers to the movement of people from a high-capacity transit line to their destination. The SkyTrain is arguably the most important component of Metro Vancouver’s regional transit service, however, in the case of Hastings Park there may be an opportunity to improve transit ridership by improving the last mile connection between SkyTrain stations and Hastings Park.

Intercept Surveys conducted during Playland on July 15, 2018 indicated that the majority of respondents visiting the Park were from outside of Vancouver and lived in municipalities with a regional SkyTrain connection. From the Intercept survey:

- 68% of Playland visitors surveyed did not live in Vancouver; and
- 59% of those visitors from outside of Vancouver who visited the park live in municipalities serviced by SkyTrain including Surrey, Burnaby, Richmond, and Coquitlam.

Currently, there are several high-frequency transit routes near Hastings Park, including the 95 B-Line on East Hastings. During the 15-Day fair, TransLink increases the frequency of Route #16 between the 29th Avenue SkyTrain Station, Renfrew Station, and the Pacific Coliseum. The #16 PNE Special increases bus service along the existing #16 route, and still serves the approximately 20 stops between 29th Avenue Station and Hastings Park (TransLink). However, with the number of regional visitors to Hastings Park there may be opportunity to increase transit mode share by creating a direct shuttle from SkyTrain Stations to Hastings Park during the Fair with no intermediate stops. A shuttle service operating from the Commercial -Broadway Station could service both Millennium Line and Expo Line travellers with one stop. A direct shuttle from nearby SkyTrain stations to Hastings Park with no intermediary stops could:

- Make transit a more attractive option for Hastings Park by reducing travel time;
- Encourage groups, such as families or persons with accessibility challenges, that have trouble travelling on the bus, to use the SkyTrain;
- Reduce traffic and parking demands during the Fair when they are highest; and
- Reduce demands placed on existing routes during the Fair, such as the existing Route #16.

A shuttle could be implemented as either a free or paid service during the 15-day Fair. A shuttle pass could be included when visitors pre-purchase their Fair ticket online. Additional analysis would need to be conducted to determine the feasibility of a shuttle service, with the following considerations:

- Passenger demand for a direct shuttle service;
- Optimal pick-up and drop-off locations (Commercial-Broadway Station, 29th Avenue Station, Renfrew Station)
- How information about the shuttle service would be disseminated to park visitors;
- Shuttle capacity, frequency and scheduling
- Cost of operating a shuttle service.

Example: Improving the Surrey SkyTrain “Last Mile” Problem

The trip from Surrey to Hastings Park is shown in **Figure 5-2**. Currently, it takes approximately 60 to 75 minutes to take transit from downtown Surrey (Surrey Central Station) to Hastings Park, but only 25 to 35 minutes to drive (Google Maps). As it only takes 25 minutes to SkyTrain from Surrey Central Station to the 29th Avenue Station, the remaining 35 to 50 minutes of travel time by transit comes from the “last mile”, or, taking the bus from the station to Hastings Park.

A frequent shuttle service with no stops between the station to the park could reduce this transit travel time from 60 to 75 minutes to 35 to 40 minutes (Google Maps), making the transit travel time comparable to vehicles driving the same distance. It currently takes 30 minutes to take the SkyTrain from Surrey Central Station to Commercial Drive Station, and a shuttle from the Commercial Drive station would take approximately 5 to 15 minutes. Additional time associated with waiting for the shuttle and pedestrian loading/offloading of the shuttle could be offset by providing a drop-off area for the shuttle directly within Hastings Park.



Figure 5-2: Location of Hastings Park in proximity to the nearest Millennium Line and Expo Line SkyTrain Stations. (Google Maps)

5.2.4 Temporary Bicycle Corrals or Bicycle Valets

Providing supervised bicycle “corrals”, often referred to as bicycle valets, for visitors is a low-cost TDM measure that would encourage visitors to travel to Hastings Park by bicycle. A lack of secure bicycle storage is a common cycling deterrent, especially at an event, such as the Fair, when it may be challenging to find secure bicycle parking. Bicycle valets encourage cycling by:

- Providing convenient and free bicycle parking on fair grounds;
- Reduce bike theft, and improve peace of mind for bicycle users visiting the park; and
- Eliminating the need for cyclists to carry a lock

A bicycle valet service could be easily implemented during the 15-day Fair, or even during weekends at Playland, and can easily be dismantled and stored when not in use. Bicycle valets can also provide minor cycle repair supplies such as an air pump and Allen keys.

Appendix A:

Playland and Fair Attendance Records and Projections

A.1 Playland Daily Attendance (2018)

Playland Daily Attendance (2018) - Only Daytime Regular Season					
	Date	Attendance		Date	Attendance
1	5/1/2018	2,976	45	7/9/2018	1,906
2	5/2/2018	2,066	46	7/10/2018	1,941
3	5/3/2018	1,596	47	7/11/2018	2,168
4	5/5/2018	2,649	48	7/12/2018	1,812
5	5/6/2018	2,153	49	7/13/2018	2,104
6	5/8/2018	2,101	50	7/14/2018	6,004
7	5/10/2018	2,789	51	7/15/2018	3,967
8	5/11/2018	3,941	52	7/16/2018	1,740
9	5/12/2018	3,147	53	7/17/2018	2,463
10	5/13/2018	2,263	54	7/18/2018	2,505
11	5/15/2018	3,663	55	7/19/2018	3,013
12	5/16/2018	3,458	56	7/20/2018	2,830
13	5/19/2018	3,574	57	7/21/2018	5,542
14	5/20/2018	3,603	58	7/22/2018	4,241
15	5/21/2018	4,225	59	7/23/2018	2,020
16	5/26/2018	3,289	60	7/24/2018	2,572
17	5/27/2018	3,369	61	7/25/2018	2,026
18	6/2/2018	3,260	62	7/26/2018	2,696
19	6/3/2018	1,437	63	7/27/2018	2,669
20	6/9/2018	5,534	64	7/28/2018	4,192
21	6/10/2018	5,945	65	7/29/2018	3,664
22	6/15/2018	1,286	66	7/30/2018	1,886
23	6/16/2018	4,372	67	7/31/2018	2,661
24	6/17/2018	2,568	68	8/1/2018	2,854
25	6/18/2018	2,914	69	8/2/2018	3,641
26	6/19/2018	3,236	70	8/3/2018	2,982
27	6/20/2018	2,199	71	8/4/2018	4,413
28	6/21/2018	2,051	72	8/5/2018	3,803
29	6/22/2018	3,580	73	8/6/2018	3,873
30	6/23/2018	4,924	74	8/7/2018	3,700
31	6/24/2018	4,819	75	8/8/2018	2,673
32	6/25/2018	3,618	76	8/9/2018	2,826
33	6/26/2018	2,784	77	8/10/2018	8,461
34	6/27/2018	2,553	78	8/11/2018	5,701
35	6/29/2018	1,751	79	8/12/2018	5,889
36	6/30/2018	843	80	8/13/2018	3,680
37	7/1/2018	2,002	81	8/14/2018	4,488
38	7/2/2018	2,930	82	8/15/2018	2,916
39	7/3/2018	2,224	83	8/16/2018	3,537
40	7/4/2018	2,474	84	8/17/2018	8,483
41	7/5/2018	2,174	85	9/8/2018	2,996
42	7/6/2018	2,457	86	9/9/2018	1,095
43	7/7/2018	2,866	87	9/15/2018	1,905
44	7/8/2018	4,000	88	9/16/2018	1,950

A.2 Fair Daily Attendance (2017)

Fair Daily Attendance (2017)		
1	Sat, Aug 19	41,552
2	Sun, Aug 20	49,270
3	Mon, Aug 21	CLOSED
4	Tue, Aug 22	54,722
5	Wed, Aug 23	34,211
6	Thu, Aug 24	48,450
7	Fri, Aug 25	46,867
8	Sat, Aug 26	42,105
9	Sun, Aug 27	50,055
10	Mon, Aug 28	CLOSED
11	Tue, Aug 29	64,439
12	Wed, Aug 30	45,123
13	Thu, Aug 31	46,216
14	Fri, Sep 1	42,572
15	Sat, Sep 2	57,624
16	Sun, Sep 3	56,329
17	Mon, Sep 4	42,931
	TOTAL	722,466

A.3 Playland Expansion Scenarios (Source: PNE)

Year	2017	2029			
	Actual	Scenario 1		Scenario 2	
Scenario	Playland	A - 2013 Planned	B - Extended Season	C - Light Theming	Business As Usual
Stabilized Attendance	537,547	749,500	881,300	679,500	564,300
Playland	315,586	497,000	497,000	440,000	333,800
Fair	114,785	140,000	140,000	127,000	118,000
Fright Nights	83,470	85,000	85,000	85,000	85,000
Playland Nights	23,706	27,500	27,500	27,500	27,500
Extended Season (Scenario 1b)	-	-	131,800	-	-
Visitor Area (ha)	5.8	9.5	9.5	9.5	5.8
Area per Attendee (sqm)	5.4	5.2	5.2	4.6	5.8
Open Days (Playland)	93	93	123	93	93

Appendix B:

Intercept Survey Questions and Survey Results

B.1 Fair Intercept Survey Sample Questionnaire (2017)

2017 Pacific National Exhibition – The Fair
Transportation Survey

1. Time of Arrival: _____

2. Staff or Visitor of the Fair/PNE?

Staff Visitor

3. How did you get to the Fair/PNE?

Car Walk Transit Bicycle

Other _____

4. If arrived by car, how many people were in your car including yourself?

1 2 3 4 5 6+

5. If you arrived by car, where did you park (Mark with X on Map)?

On-street Off-street, i.e., in a parking lot

Private Properties Elsewhere _____



1. Time of Arrival: _____

2. Staff or Visitor of the Fair/PNE?

Staff Visitor

3. How did you get to the Fair/PNE?

Car Walk Transit Bicycle

Other _____

4. If arrived by car, how many people were in your car including yourself?

1 2 3 4 5 6+

5. If you arrived by car, where did you park (Mark with X on Map)?

On-street Off-street, i.e., in a parking lot

Private Properties Elsewhere _____



1. Prepared by R.F. Binnie & Associated Ltd.; Performed by TransTech Data Services Ltd.
2. Authorized by the Pacific National Exhibition and City of Vancouver
3. The information collected in this questionnaire is confidential, anonymous, and shall only be used for the Traffic, Parking, and Access Study

B.2 Fair Intercept Survey Results (2017)

No.	Time	Gate	Purpose	Travel Mode	Passengers	Parking	Location	Other
1	10:00 AM	Staff Gate	Visitor	Bicycle	1			
2	10:00 AM	Gate 1	Visitor	Car	4	Off-Street	Pender and Renfrew Lot	
3	10:00 AM	Gate 1	Visitor	Transit	1			
4	10:00 AM	Gate 1	Visitor	Car	3	On-Street	South	
5	10:00 AM	Gate 1	Visitor	Car	2	Off-Street	Pender and Renfrew Lot	
6	10:00 AM	Gate 1	Visitor	Car	2	Off-Street	Lot 16	
7	10:00 AM	Gate 1	Visitor	Car	6+	Off-Street	Lot 7/8	
8	10:00 AM	Gate 1	Visitor	Car	4	Private Property	West	
9	10:00 AM	Gate 1	Visitor	Car	2	Off-Street	Lot 7/8	
10	10:00 AM	Staff Gate	Visitor	Transit	1			
11	10:15 AM	Gate 2	Visitor	Car	1	Off-Street	Pender and Renfrew Lot	
12	10:15 AM	Gate 1	Visitor	Car	2	Off-Street	Lot 16	
13	10:15 AM	Gate 1	Visitor	Transit	1			
14	10:15 AM	Gate 2	Visitor	Car	3	Off-Street	Pender and Renfrew Lot	
15	10:15 AM	Gate 1	Visitor	Car	6+	On-Street	Unknown	
16	10:15 AM	Gate 1	Visitor	Car	4	Off-Street	Lot 16	
17	10:15 AM	Gate 2	Visitor	Car	4	Off-Street	Lot 1	
18	10:15 AM	Gate 1	Visitor	Taxi	4			
19	10:15 AM	Gate 2	Visitor	Car	2	Off-Street	Lot 9B	
20	10:15 AM	Gate 1	Visitor	Car	4	On-Street	West	
21	10:15 AM	Gate 1	Staff	Taxi	3			
22	10:15 AM	Gate 1	Visitor	Car	3	On-Street	West	
23	10:15 AM	Staff Gate	Visitor	Transit	1			
24	10:15 AM	Gate 1	Visitor	Transit	1			
25	10:30 AM	Gate 1	Visitor	Car	2	On-Street	South	
26	10:30 AM	Staff Gate	Staff	Taxi	3			
27	10:30 AM	Gate 1	Visitor	Car	4	On-Street	South	
28	10:30 AM	Gate 2	Staff	Car	1	Off-Street	Lot 1	
29	10:30 AM	Gate 1	Visitor	Car	1	On-Street	West	
30	10:30 AM	Staff Gate	Staff	Taxi	2			
31	10:30 AM	Gate 2	Staff	Car	2	Off-Street	Lot 16	
32	10:45 AM	Gate 2	Visitor	Car	3	Off-Street	Lot 16	
33	10:45 AM	Gate 1	Visitor	Car	2	Off-Street	Pender and Renfrew Lot	
34	10:45 AM	Gate 1	Visitor	Car	4	Off-Street	Pender and Renfrew Lot	
35	10:45 AM	Staff Gate	Staff	Taxi	2			
36	10:45 AM	Staff Gate	Staff	Taxi	1			
37	10:45 AM	Gate 1	Visitor	Transit	1			
38	10:45 AM	Gate 1	Visitor	Car	3	On-Street	South	
39	10:45 AM	Gate 1	Visitor	Taxi	2			
40	10:45 AM	Gate 1	Visitor	Car	2	Other	West	Church parking lot
41	10:45 AM	Gate 13	Visitor	Car	3	Off-Street	Pender and Renfrew Lot	
42	10:45 AM	Staff Gate	Staff	Walk	1			
43	10:45 AM	Gate 1	Visitor	Transit	1			
44	10:45 AM	Gate 1	Visitor	Walk	1			
45	10:45 AM	Gate 13	Visitor	Car	3	On-Street	South	
46	11:00 AM	Gate 1	Visitor	Car	4	On-Street	South	
47	11:00 AM	Gate 13	Visitor	Car	2	On-Street	South	
48	11:00 AM	Gate 1	Visitor	Car	3	Off-Street	Pender and Renfrew Lot	
49	11:00 AM	Gate 13	Visitor	Transit	2			
50	11:00 AM	Gate 1	Visitor	Car	5	Off-Street	Pender and Renfrew Lot	

No.	Time	Gate	Purpose	Travel Mode	Passengers	Parking	Location	Other
51	11:00 AM	Gate 13	Visitor	Car	4	Off-Street	Lot 16	
52	11:00 AM	Gate 13	Visitor	Transit	1			
53	11:00 AM	Gate 1	Visitor	Car	5	On-Street	West	
54	11:00 AM	Gate 1	Visitor	Car	2	Private Property	South	
55	11:00 AM	Gate 1	Visitor	Car	5	On-Street	West	
56	11:00 AM	Gate 13	Visitor	Car	3	Off-Street	Lot 16	
57	11:00 AM	Gate 13	Visitor	Car	4	On-Street	South	
58	11:00 AM	Gate 1	Visitor	Car	4	On-Street	West	
59	11:00 AM	Gate 13	Visitor	Car	2	Off-Street	Lot 16	
60	11:00 AM	Gate 1	Visitor	Car	2	On-Street	Unknown	
61	11:00 AM	Gate 13	Visitor	Car	2	Off-Street	Lot 16	
62	11:00 AM	Gate 1	Visitor	Car	2	Off-Street	Pender and Renfrew Lot	
63	11:00 AM	Gate 13	Visitor	Taxi	3			
64	11:00 AM	Gate 1	Visitor	Walk	1			
65	11:00 AM	Gate 13	Visitor	Car	1	On-Street	Unknown	
66	11:00 AM	Gate 1	Visitor	Bicycle	1			
67	11:00 AM	Gate 1	Visitor	Car	2	Off-Street	Lot 16	
68	11:00 AM	Gate 1	Visitor	Car	2	Other	South-West	Hotel parking lot
69	11:15 AM	Gate 1	Visitor	Transit	1			
70	11:15 AM	Gate 1	Visitor	Car	1	On-Street	East	
71	11:15 AM	Gate 13	Visitor	Car	3	On-Street	South	
72	11:15 AM	Gate 1	Visitor	Car	4	Off-Street	Lot 7/8	
73	11:15 AM	Gate 1	Visitor	Car	1	Off-Street	Pender and Renfrew Lot	
74	11:15 AM	Gate 1	Visitor	Car	1	Off-Street	Lot 7/8	
75	11:15 AM	Gate 1	Visitor	Car	4	Private Property	South	
76	11:15 AM	Gate 1	Visitor	Transit	1			
77	11:15 AM	Gate 13	Visitor	Car	2	Off-Street	Lot 16	
78	11:15 AM	Gate 1	Visitor	Car	2	On-Street	South	
79	11:15 AM	Gate 1	Visitor	Car	5	Off-Street	Lot 16	
80	11:15 AM	Gate 1	Visitor	Car	1	Off-Street	Pender and Renfrew Lot	
81	11:15 AM	Gate 1	Visitor	Car	3	Off-Street	Pender and Renfrew Lot	
82	11:15 AM	Gate 13	Visitor	Transit	2			
83	11:15 AM	Gate 13	Visitor	Car	2	On-Street	South	
84	11:15 AM	Gate 1	Visitor	Car	4	On-Street	East	
85	11:15 AM	Gate 1	Visitor	Transit	1			
86	11:15 AM	Gate 1	Visitor	Walk	1			
87	11:30 AM	Gate 1	Visitor	Car	3	Off-Street	Pender and Renfrew Lot	
88	11:30 AM	Gate 13	Visitor	Taxi	2			
89	11:30 AM	Gate 1	Visitor	Car	3	Off-Street	Pender and Renfrew Lot	
90	11:30 AM	Gate 1	Visitor	Walk	1			
91	11:30 AM	Gate 1	Visitor	Car	2	Other	West	Apt bldg parking lot
92	11:30 AM	Gate 13	Visitor	Taxi	2			
93	11:30 AM	Gate 13	Visitor	Taxi	2			
94	11:30 AM	Gate 1	Visitor	Transit	1			
95	11:30 AM	Gate 1	Visitor	Transit	1			
96	11:30 AM	Gate 1	Visitor	Transit	1			
97	11:30 AM	Gate 13	Visitor	Car	5	On-Street	South	
98	11:30 AM	Gate 1	Visitor	Car	6+	Off-Street	Pender and Renfrew Lot	
99	11:30 AM	Gate 1	Visitor	Car	3	On-Street	South	
100	11:30 AM	Gate 1	Visitor	Transit	1			

No.	Time	Gate	Purpose	Travel Mode	Passengers	Parking	Location	Other
101	11:30 AM	Gate 1	Visitor	Car	2	On-Street	West	
102	11:30 AM	Gate 1	Visitor	Transit	1			
103	11:30 AM	Gate 1	Visitor	Car	3	On-Street	South	
104	11:30 AM	Gate 1	Visitor	Taxi	6+			
105	11:30 AM	Gate 1	Visitor	Car	3	Off-Street	Lot 16	
106	11:30 AM	Gate 1	Visitor	Transit	1			
107	11:30 AM	Gate 1	Visitor	Car	1	On-Street	East	
108	11:30 AM	Gate 1	Visitor	Car	3	Off-Street	Pender and Renfrew Lot	
109	11:30 AM	Gate 13	Visitor	Car	4	Private Property	South	
110	11:30 AM	Gate 1	Visitor	Car	6+	On-Street	West	
111	11:30 AM	Gate 1	Visitor	Car	2	On-Street	West	
112	11:30 AM	Gate 1	Visitor	Transit	2			
113	11:30 AM	Gate 1	Visitor	Car	2	Off-Street	Lot 16	
114	11:45 AM	Gate 1	Visitor	Car	1	On-Street	South-West	
115	11:45 AM	Gate 1	Visitor	Transit	1			
116	11:45 AM	Gate 1	Visitor	Car	5	Off-Street	Lot 7/8	
117	11:45 AM	Gate 1	Visitor	Bicycle	1			
118	11:45 AM	Gate 13	Visitor	Car	6+	On-Street	South	
119	11:45 AM	Gate 13	Visitor	Car	4	Off-Street	Lot 16	
120	11:45 AM	Gate 1	Visitor	Transit	1			
121	11:45 AM	Gate 1	Visitor	Taxi	1			
122	11:45 AM	Gate 1	Visitor	Car	1	Private Property	Unknown	
123	11:45 AM	Gate 1	Visitor	Walk	1			
124	11:45 AM	Gate 1	Visitor	Car	3	Private Property	South	
125	11:45 AM	Gate 1	Visitor	Transit	1			
126	11:45 AM	Gate 1	Visitor	Car	1	On-Street	North	
127	11:45 AM	Gate 1	Visitor	Transit	1			
128	11:45 AM	Gate 1	Visitor	Transit	1			
129	11:45 AM	Gate 1	Visitor	Transit	1			
130	11:45 AM	Gate 1	Visitor	Car	4	On-Street	South	
131	11:45 AM	Gate 1	Visitor	Car	3	On-Street	West	
132	12:00 PM	Gate 1	Visitor	Transit	1			
133	12:00 PM	Gate 1	Visitor	Car	1	Private Property	Unknown	
134	12:00 PM	Gate 1	Visitor	Car	3	Off-Street	Pender and Renfrew Lot	
135	12:00 PM	Gate 1	Visitor	Car	2	Private Property	West	
136	12:00 PM	Gate 13	Visitor	Transit	5			
137	12:00 PM	Gate 13	Visitor	Car	6+	Off-Street	Lot 16	
138	12:00 PM	Gate 1	Visitor	Walk				
139	12:00 PM	Gate 1	Visitor	Car	4	Private Property	South	
140	12:00 PM	Gate 1	Visitor	Car	1	On-Street	West	
141	12:00 PM	Gate 1	Visitor	Car	3	On-Street	West	
142	12:00 PM	Gate 1	Visitor	Transit	1			
143	12:00 PM	Gate 13	Visitor	Car	5	Off-Street	Lot 16	
144	12:00 PM	Gate 13	Visitor	Car	2	On-Street	South	
145	12:00 PM	Gate 1	Visitor	Car	2	On-Street	West	
146	12:00 PM	Gate 1	Visitor	Car	5	On-Street	West	
147	12:00 PM	Gate 1	Visitor	Car	3	On-Street	West	
148	12:00 PM	Gate 1	Visitor	Car	6+	On-Street	North	
149	12:00 PM	Gate 13	Visitor	Car	5	Private Property	South	
150	12:00 PM	Gate 13	Visitor	Transit	4			

No.	Time	Gate	Purpose	Travel Mode	Passengers	Parking	Location	Other
151	12:00 PM	Gate 1	Visitor	Car	3	Private Property	South-West	
152	12:00 PM	Gate 1	Visitor	Transit	1			
153	12:00 PM	Gate 1	Visitor	Car	1	On-Street	West	
154	12:00 PM	Gate 13	Visitor	Car	2	On-Street	South	
155	12:00 PM	Gate 13	Visitor	Car	2	On-Street	South	
156	12:00 PM	Gate 1	Visitor	Car Share	1	On-Street	Unknown	Car Share
157	12:15 PM	Gate 1	Visitor	Walk				
158	12:15 PM	Gate 1	Visitor	Car	3	Private Property	South	
159	12:15 PM	Gate 1	Visitor	Car	4	Private Property	South	
160	12:15 PM	Gate 1	Visitor	Transit	1			
161	12:15 PM	Gate 1	Visitor	Car	4	Other	South	Hastings Community Centre
162	12:15 PM	Gate 1	Visitor	Shuttle	1			Shuttle
163	12:15 PM	Gate 1	Visitor	Car	4	On-Street	Unknown	
164	12:15 PM	Gate 1	Visitor	Taxi	6+			Got dropped off
165	12:15 PM	Gate 1	Visitor	Car	2	Private Property	South-East	
166	12:15 PM	Gate 1	Visitor	Transit	1			
167	12:15 PM	Gate 1	Visitor	Transit	1			
168	12:15 PM	Gate 1	Visitor	Car	2	Private Property	East	
169	12:15 PM	Gate 1	Visitor	Car	2	Private Property	West	
170	12:15 PM	Gate 1	Visitor	Car	3	On-Street	West	
171	12:15 PM	Gate 1	Visitor	Car	3	Private Property	Unknown	
172	12:30 PM	Gate 1	Visitor	Car	1	On-Street	West	
173	12:30 PM	Gate 1	Visitor	Transit	1			
174	12:30 PM	Gate 1	Visitor	Car	4	On-Street	West	
175	12:30 PM	Gate 1	Visitor	Transit	1			
176	12:30 PM	Gate 1	Visitor	Transit	1			
177	12:30 PM	Gate 1	Visitor	Transit	1			
178	12:30 PM	Gate 1	Visitor	Car	3	On-Street	West	
179	12:30 PM	Gate 1	Visitor	Car	6+	Private Property	South	
180	12:30 PM	Gate 1	Visitor	Car	4	Private Property	West	
181	12:30 PM	Gate 1	Visitor	Bicycle				
182	12:45 PM	Gate 1	Visitor	Car	6+	On-Street	West	
183	12:45 PM	Gate 1	Visitor	Car	1	On-Street	West	
184	12:45 PM	Gate 1	Visitor	Car	1	Private Property	Unknown	
185	12:45 PM	Gate 1	Visitor	Bicycle				
186	12:45 PM	Gate 1	Visitor	Car	3	Off-Street	Pender and Renfrew Lot	
187	12:45 PM	Gate 1	Visitor	Car	2	Off-Street	Lot 16	
188	12:45 PM	Gate 1	Visitor	Car	2	On-Street	Unknown	
189	12:45 PM	Gate 1	Visitor	Transit	1			
190	12:45 PM	Gate 1	Visitor	Car	4	Off-Street	Pender and Renfrew Lot	
191	12:45 PM	Gate 1	Visitor	Car	1	Off-Street	Pender and Renfrew Lot	
192	12:45 PM	Gate 1	Visitor	Car	3	On-Street	West	
193	12:45 PM	Gate 1	Visitor	Car	2	Off-Street	Pender and Renfrew Lot	
194	12:45 PM	Gate 1	Visitor	Car	1	On-Street	Unknown	
195	12:45 PM	Gate 1	Visitor	Car	3	Private Property	Unknown	
196	12:45 PM	Gate 1	Visitor	Car	4	Private Property	East	
197	12:45 PM	Gate 1	Visitor	Walk				
198	12:45 PM	Gate 1	Visitor	Car	3	On-Street	West	
199	12:45 PM	Gate 1	Visitor	Car	3	On-Street	Unknown	
200	12:45 PM	Gate 1	Visitor	Transit	1			

No.	Time	Gate	Purpose	Travel Mode	Passengers	Parking	Location	Other
201	12:45 PM	Gate 1	Visitor	Walk				
202	12:45 PM	Gate 1	Visitor	Transit	1			
203	12:45 PM	Gate 1	Visitor	Transit	1			
204	12:45 PM	Gate 1	Visitor	Walk				
205	12:45 PM	Gate 1	Visitor	Transit	1			
206	12:45 PM	Gate 1	Visitor	Car	2	Off-Street	Unknown	
207	1:00 PM	Gate 1	Visitor	Car	4	Off-Street	Pender and Renfrew Lot	
208	1:00 PM	Gate 1	Visitor	Car	2	Off-Street	Lot 16	
209	1:00 PM	Gate 13	Visitor	Car	2	Private Property	South	
210	1:00 PM	Gate 1	Visitor	Car	1	On-Street	Unknown	
211	1:00 PM	Gate 1	Visitor	Car	3	Private Property	South	
212	1:00 PM	Gate 1	Visitor	Transit	1			
213	1:00 PM	Gate 1	Visitor	Taxi	6+			Got dropped off
214	1:00 PM	Gate 1	Visitor	Transit	1			
215	1:00 PM	Gate 1	Visitor	Transit	1			
216	1:00 PM	Gate 1	Visitor	Car	1	Private Property	Unknown	
217	1:00 PM	Gate 1	Visitor	Car	3	Off-Street	Pender and Renfrew Lot	
218	1:00 PM	Gate 1	Visitor	Car	3	On-Street	West	
219	1:00 PM	Gate 1	Visitor	Transit	1			
220	1:00 PM	Gate 1	Visitor	Transit	1			
221	1:00 PM	Gate 13	Visitor	Car	2	Private Property	South	
222	1:00 PM	Gate 13	Visitor	Taxi	1			Got dropped off
223	1:00 PM	Gate 1	Visitor	Car	3	Off-Street	Pender and Renfrew Lot	
224	1:00 PM	Gate 1	Visitor	Transit	1			
225	1:00 PM	Gate 13	Visitor	Car	3	Private Property	South	
226	1:00 PM	Gate 13	Visitor	Car	3	Private Property	South	
227	1:00 PM	Gate 13	Visitor	Car	2	On-Street	South	
228	1:00 PM	Gate 1	Visitor	Transit	1			
229	1:15 PM	Gate 13	Visitor	Car	3	Private Property	South	
230	1:15 PM	Gate 1	Visitor	Car	1	Private Property	Unknown	
231	1:15 PM	Gate 1	Visitor	Car Share	3	On-Street	Unknown	Car Share
232	1:15 PM	Gate 13	Visitor	Car	6+	Private Property	South	
233	1:15 PM	Gate 13	Visitor	Car	2	Private Property	South	
234	1:15 PM	Gate 13	Visitor	Car	5	Off-Street	Lot 16	
235	1:15 PM	Gate 13	Visitor	Car	2	Off-Street	Lot 16	
236	1:15 PM	Gate 13	Visitor	Car	2	Private Property	South	
237	1:15 PM	Gate 13	Visitor	Car	2	On-Street	South-East	
238	1:15 PM	Gate 1	Visitor	Taxi	1			Got dropped off
239	1:15 PM	Gate 13	Visitor	Taxi	2			Got dropped off
240	1:15 PM	Gate 13	Visitor	Car	2	On-Street	South	
241	1:15 PM	Gate 13	Visitor	Car	3	Private Property	South-East	
242	1:15 PM	Gate 13	Visitor	Car	3	On-Street	East	
243	1:15 PM	Gate 13	Visitor	Car	3	On-Street	East	
244	1:30 PM	Gate 13	Visitor	Car	2	Private Property	South	
245	1:30 PM	Gate 13	Visitor	Car	3	On-Street	South	
246	1:30 PM	Gate 13	Visitor	Car	4	Private Property	South	
247	1:30 PM	Gate 1	Visitor	Taxi	2			Got dropped off
248	1:30 PM	Gate 1	Visitor	Transit	6+			
249	1:30 PM	Gate 1	Visitor	Walk				
250	1:30 PM	Gate 13	Visitor	Car	5	Private Property	South	

No.	Time	Gate	Purpose	Travel Mode	Passengers	Parking	Location	Other
251	1:30 PM	Gate 13	Visitor	Car	3	Private Property	South-East	
252	1:30 PM	Gate 13	Visitor	Car	4	Private Property	South-East	
253	1:30 PM	Gate 13	Visitor	Car	2	Private Property	South	
254	1:30 PM	Gate 1	Visitor	Car	1	Off-Street	Lot 16	
255	1:30 PM	Gate 13	Visitor	Car	3	Private Property	South	
256	1:30 PM	Gate 13	Visitor	Car	6+	Off-Street	Lot 16	
257	1:30 PM	Gate 1	Visitor	Car	2	Off-Street	Lot 16	
258	1:30 PM	Gate 1	Visitor	Car	2	On-Street	Unknown	
259	1:30 PM	Gate 1	Visitor	Car	3	On-Street	Unknown	
260	1:45 PM	Gate 1	Visitor	Transit	1			
261	1:45 PM	Gate 1	Visitor	Transit	1			
262	1:45 PM	Gate 1	Visitor	Car	2	On-Street	Unknown	
263	1:45 PM	Gate 13	Visitor	Car	2	Private Property	South	
264	1:45 PM	Gate 13	Visitor	Transit	2			
265	1:45 PM	Gate 13	Visitor	Car	2	Private Property	South	
266	1:45 PM	Gate 13	Visitor	Taxi	2			Got dropped off
267	1:45 PM	Gate 1	Visitor	Taxi	2			Got dropped off
268	1:45 PM	Gate 1	Visitor	Car	2	On-Street	Unknown	
269	1:45 PM	Gate 1	Visitor	Car	4	On-Street	Unknown	
270	1:45 PM	Gate 1	Visitor	Car	2	Off-Street	Lot 9B	
271	2:00 PM	Gate 1	Visitor	Car	2	Off-Street	Lot 16	
272	2:00 PM	Gate 13	Visitor	Car	6+	Private Property	South	
273	2:00 PM	Gate 13	Visitor	Car	2	On-Street	South	
274	2:00 PM	Gate 1	Visitor	Car	2	Private Property	Unknown	
275	2:00 PM	Gate 1	Visitor	Car	2	Off-Street	Lot 16	
276	2:00 PM	Gate 1	Visitor	Car	4	Off-Street	Lot 16	
277	2:00 PM	Gate 13	Visitor	Car	5	Private Property	South	
278	2:00 PM	Gate 13	Visitor	Car	6+	Off-Street	Lot 16	
279	2:00 PM	Gate 1	Visitor	Car	4	Off-Street	Lot 16	
280	2:00 PM	Gate 1	Visitor	Transit	1			
281	2:00 PM	Gate 1	Visitor	Car	4	Off-Street	Lot 16	
282	2:00 PM	Gate 1	Visitor	Transit	1			
283	2:00 PM	Gate 1	Visitor	Car	6+	Private Property	South	
284	2:00 PM	Gate 13	Visitor	Car	2	Private Property	South	
285	2:00 PM	Gate 13	Visitor	Walk	4			
286	2:00 PM	Gate 1	Visitor	Car	3	Private Property	Unknown	
287	2:00 PM	Gate 1	Visitor	Walk				
288	2:00 PM	Gate 1	Visitor	Transit	1			
289	2:00 PM	Gate 1	Visitor	Transit	1			
290	2:00 PM	Gate 1	Visitor	Transit	1			
291	2:00 PM	Gate 1	Visitor	Transit	1			
292	2:15 PM	Gate 1	Visitor	Car	5	On-Street	Unknown	near school
293	2:15 PM	Gate 13	Visitor	Car	2	Private Property	South	
294	2:15 PM	Gate 13	Visitor	Car	4	Private Property	South	
295	2:30 PM	Gate 1	Visitor	Car	3	On-Street	West	
296	2:30 PM	Gate 1	Visitor	Transit	1			
297	2:45 PM	Gate 1	Visitor	Transit	1			
298	3:00 PM	Gate 1	Visitor	Transit	1			
299	3:00 PM	Gate 13	Visitor	Car	4	Private Property	South	
300	3:00 PM	Gate 13	Visitor	Car	2	On-Street	South	

No.	Time	Gate	Purpose	Travel Mode	Passengers	Parking	Location	Other
301	3:00 PM	Gate 13	Visitor	Car	1	On-Street	South	
302	3:00 PM	Gate 13	Visitor	Car	2	Private Property	South	
303	3:00 PM	Miller Gate	Visitor	Walk	2			
304	3:00 PM	Gate 13	Visitor	Taxi	3			Got dropped off
305	3:00 PM	Gate 13	Visitor	Car	2	Private Property	South	
306	3:00 PM	Gate 13	Visitor	Car	4	Private Property	South	
307	3:00 PM	Gate 1	Visitor	Car	2	Off-Street	Pender and Renfrew Lot	
308	3:15 PM	Gate 13	Visitor	Car	4	Off-Street	Lot 16	
309	3:15 PM	Gate 1	Visitor	Car	2	Other	West	Atrium Inn Vancouver
310	3:15 PM	Gate 13	Visitor	Car	3	On-Street	South-East	
311	3:15 PM	Gate 13	Visitor	Car	2	On-Street	South	
312	3:15 PM	Gate 13	Visitor	Car	6+	Off-Street	Lot 16	
313	3:15 PM	Gate 1	Visitor	Transit	1			
314	3:15 PM	Gate 13	Visitor	Walk	1			
315	3:15 PM	Gate 13	Visitor	Transit	1			
316	3:15 PM	Gate 13	Visitor	Car	6+	Off-Street	Lot 16	
317	3:15 PM	Gate 13	Visitor	Car	3	Private Property	South	
318	3:15 PM	Gate 13	Visitor	Car	2	Private Property	South	
319	3:15 PM	Gate 13	Visitor	Car	4	Private Property	South	
320	3:15 PM	Gate 13	Visitor	Car	2	Private Property	South	
321	3:15 PM	Gate 13	Visitor	Car	5	Private Property	South	
322	3:15 PM	Gate 13	Visitor	Transit	3			
323	3:15 PM	Gate 1	Visitor	Car	5	On-Street	West	
324	3:15 PM	Gate 13	Visitor	Car	3	Private Property	South	
325	3:30 PM	Gate 13	Visitor	Car	5	Off-Street	Lot 16	
326	3:30 PM	Gate 13	Visitor	Car	3	Off-Street	Lot 16	
327	3:30 PM	Gate 1	Visitor	Transit	1			
328	3:30 PM	Miller Gate	Visitor	Car	2	Off-Street	Lot 9B	
329	3:30 PM	Gate 13	Visitor	Car	5	Off-Street	Lot 16	
330	3:30 PM	Gate 13	Visitor	Car	3	Private Property	South	
331	3:30 PM	Gate 13	Visitor	Transit	4			
332	3:30 PM	Gate 13	Visitor	Car	4	Off-Street	Lot 16	
333	3:30 PM	Gate 1	Visitor	Walk	1			
334	3:30 PM	Gate 13	Visitor	Car	4	Off-Street	Lot 16	
335	3:30 PM	Gate 13	Visitor	Walk	2			
336	3:30 PM	Gate 13	Visitor	Car	2	Off-Street	Lot 16	
337	3:30 PM	Gate 13	Visitor	Car	5	Off-Street	Lot 16	
338	3:30 PM	Gate 1	Visitor	Transit	1			
339	3:30 PM	Gate 13	Visitor	Car	3	On-Street	South-East	
340	3:30 PM	Gate 13	Visitor	Transit	2			
341	3:30 PM	Gate 13	Visitor	Car	3	Private Property	South	
342	3:30 PM	Gate 13	Visitor	Car	2	Private Property	South-East	
343	3:30 PM	Gate 13	Visitor	Car	5	Off-Street	Lot 16	
344	3:30 PM	Gate 13	Visitor	Car	4	Off-Street	Lot 16	
345	3:30 PM	Gate 13	Visitor	Car	4	On-Street	West	
346	3:30 PM	Gate 13	Visitor	Car	4	Private Property	South	
347	3:30 PM	Gate 13	Visitor	Car	5	Private Property	South	
348	3:30 PM	Gate 1	Visitor	Walk	1			
349	3:30 PM	Gate 13	Visitor	Car	4	Private Property	South-East	
350	3:30 PM	Gate 13	Visitor	Car	4	Private Property	South-East	

No.	Time	Gate	Purpose	Travel Mode	Passengers	Parking	Location	Other
351	3:45 PM	Gate 13	Visitor	Bicycle	2			
352	3:45 PM	Gate 13	Visitor	Car	4	Off-Street	Lot 16	
353	3:45 PM	Gate 1	Visitor	Transit	1			
354	3:45 PM	Gate 1	Visitor	Car	2	Private Property	West	
355	3:45 PM	Gate 1	Visitor	Car	2	Off-Street	Lot 9B	
356	3:45 PM	Gate 1	Visitor	Car	2	Off-Street	Lot 9B	
357	3:45 PM	Gate 1	Visitor	Car	3	Private Property	Unknown	
358	3:45 PM	Gate 1	Visitor	Transit	1			
359	4:00 PM	Gate 1	Visitor	Car	4	Private Property	Unknown	
360	4:00 PM	Gate 1	Visitor	Transit	1			
361	4:00 PM	Gate 1	Visitor	Car	2	On-Street	West	
362	4:00 PM	Gate 1	Visitor	Transit	1			
363	4:00 PM	Miller Gate	Visitor	Car	1	Off-Street	Lot 9B	
364	4:00 PM	Gate 1	Visitor	Car	3	On-Street	South	
365	4:15 PM	Gate 1	Visitor	Transit	1			
366	4:15 PM	Miller Gate	Visitor	Car	4	Off-Street	Lot 7/8	
367	4:15 PM	Miller Gate	Visitor	Car	2	Off-Street	Lot 9B	
368	4:15 PM	Gate 1	Visitor	Transit	1			
369	4:15 PM	Gate 1	Visitor	Car	4	Private Property	Unknown	
370	4:15 PM	Miller Gate	Visitor	Car	5	Off-Street	Lot 9B	
371	4:15 PM	Miller Gate	Visitor	Car	4	Off-Street	Lot 7/8	
372	4:15 PM	Miller Gate	Visitor	Car	6+	Off-Street	Lot 7/8	
373	4:30 PM	Miller Gate	Visitor	Car	2	Off-Street	Lot 7/8	
374	4:30 PM	Miller Gate	Visitor	Car	2	Off-Street	Lot 9B	
375	4:30 PM	Gate 1	Visitor	Transit	1			
376	4:30 PM	Gate 1	Visitor	Car	3	On-Street	West	
377	4:45 PM	Gate 1	Visitor	Car	2	On-Street	South	
378	4:45 PM	Gate 1	Visitor	Bicycle				
379	4:45 PM	Gate 1	Visitor	Transit	1			
380	4:45 PM	Gate 1	Visitor	Car	3	Off-Street	Pender and Renfrew Lot	
381	4:45 PM	Gate 1	Visitor	Car	1	On-Street	West	
382	5:00 PM	Gate 1	Visitor	Car	3	Off-Street	Pender and Renfrew Lot	
383	5:00 PM	Gate 1	Visitor	Car Share	5	On-Street	West	Car share
384	5:00 PM	Gate 1	Visitor	Car	4	On-Street	West	
385	5:00 PM	Gate 13	Visitor	Car	2	Off-Street	Lot 16	
386	5:00 PM	Gate 13	Visitor	Walk	2			
387	5:00 PM	Gate 13	Visitor	Car	3	Private Property	South	
388	5:00 PM	Gate 13	Visitor	Transit	2			
389	5:00 PM	Gate 4	Visitor	Car	2	Off-Street	Lot 7/8	
390	5:00 PM	Gate 1	Visitor	Transit	1			
391	5:00 PM	Gate 13	Visitor	Walk	3			
392	5:00 PM	Gate 13	Visitor	Transit	6+			
393	5:00 PM	Gate 1	Visitor	Car	3	On-Street	West	
394	5:00 PM	Gate 13	Staff	Transit	1			
395	5:00 PM	Gate 13	Staff	Taxi	1			Got dropped off
396	5:00 PM	Gate 13	Visitor	Walk	2			
397	5:00 PM	Gate 1	Visitor	Car	1	On-Street	West	
398	5:15 PM	Gate 4	Visitor	Car	4	Off-Street	Lot 7/8	
399	5:15 PM	Gate 1	Visitor	Transit	1			
400	5:15 PM	Gate 13	Visitor	Car	3	Off-Street	Lot 16	

No.	Time	Gate	Purpose	Travel Mode	Passengers	Parking	Location	Other
401	5:15 PM	Gate 13	Visitor	Transit	1			
402	5:15 PM	Gate 13	Visitor	Car	6+	Private Property	South	
403	5:15 PM	Gate 4	Visitor	Transit	1			
404	5:15 PM	Gate 13	Visitor	Car	4	Off-Street	Lot 16	
405	5:15 PM	Gate 13	Visitor	Car	6+	Private Property	South-East	
406	5:15 PM	Gate 4	Visitor	Car	2	Off-Street	Lot 7/8	
407	5:15 PM	Gate 13	Visitor	Taxi	2			
408	5:15 PM	Gate 13	Visitor	Taxi	3			
409	5:15 PM	Gate 1	Visitor	Car	4	Private Property	East	
410	5:15 PM	Gate 13	Staff	Car	1	Private Property	South	
411	5:15 PM	Gate 13	Visitor	Car	2	Private Property	East	
412	5:15 PM	Gate 13	Visitor	Car	2	Off-Street	Lot 16	
413	5:15 PM	Gate 1	Visitor	Transit	1			
414	5:15 PM	Gate 13	Visitor	Walk	1			
415	5:15 PM	Gate 13	Staff	Bicycle				
416	5:15 PM	Gate 13	Staff	Taxi	1			Got dropped off
417	5:30 PM	Gate 13	Visitor	Car	3	Off-Street	Lot 16	
418	5:30 PM	Gate 1	Visitor	Car	3	Off-Street	Unknown	Racecourse
419	5:30 PM	Gate 13	Visitor	Car	4	Off-Street	Lot 16	
420	5:30 PM	Gate 13	Visitor	Car	2	Private Property	South-East	
421	5:30 PM	Gate 1	Visitor	Transit	1			
422	5:30 PM	Gate 13	Visitor	Transit	2			
423	5:30 PM	Gate 13	Visitor	Car	3	Off-Street	Lot 16	
424	5:30 PM	Gate 13	Visitor	Transit	1			
425	5:30 PM	Gate 13	Visitor	Car	4	Private Property	South	
426	5:30 PM	Gate 13	Visitor	Car	2	Private Property	South	
427	5:30 PM	Gate 13	Visitor	Walk	2			
428	5:30 PM	Gate 13	Visitor	Walk	2			
429	5:30 PM	Gate 1	Visitor	Transit	1			
430	5:30 PM	Gate 13	Visitor	Taxi	1			Got dropped off
431	5:30 PM	Gate 1	Visitor	Taxi	3			Got dropped off
432	5:30 PM	Gate 13	Visitor	Car	2	Private Property	South-East	
433	5:30 PM	Gate 1	Visitor	Car	6+	Private Property	West	
434	5:30 PM	Gate 13	Staff	Walk	1			
435	5:30 PM	Gate 13	Visitor	Walk	2			
436	5:30 PM	Gate 13	Visitor	Walk	3			
437	5:45 PM	Gate 13	Visitor	Car	4	On-Street	South	
438	5:45 PM	Gate 13	Visitor	Walk	1			
439	5:45 PM	Gate 13	Visitor	Transit	4			
440	5:45 PM	Gate 4	Visitor	Car	2	Off-Street	Lot 7/8	
441	5:45 PM	Gate 13	Visitor	Car	3	On-Street	West	
442	6:00 PM	Gate 4	Visitor	Car	1	Off-Street	Lot 7/8	
443	6:00 PM	Gate 4	Visitor	Taxi	3			Got dropped off
444	6:00 PM	Gate 4	Visitor	Taxi	2			Got dropped off
445	6:00 PM	Gate 4	Visitor	Transit	1,00			
446	6:00 PM	Gate 1	Visitor	Transit	1			
447	6:00 PM	Gate 4	Visitor	Car Share	2	On-Street	Unknown	Car share
448	6:00 PM	Gate 4	Visitor	Car	1	On-Street	Unknown	
449	6:00 PM	Gate 1	Visitor	Car Share	1	On-Street	South	Car share
450	6:15 PM	Gate 4	Visitor	Car	2	Off-Street	Lot 7/8	

No.	Time	Gate	Purpose	Travel Mode	Passengers	Parking	Location	Other
451	6:15 PM	Gate 4	Visitor	Car	4	Off-Street	Lot 7/8	
452	6:15 PM	Gate 4	Visitor	Car	1	Off-Street	Lot 7/8	
453	6:30 PM	Gate 4	Visitor	Car	4	On-Street	Unknown	
454	6:30 PM	Gate 4	Visitor	Car	3	Off-Street	Lot 7/8	
455	6:30 PM	Gate 4	Visitor	Car	2	Off-Street	Lot 7/8	
456	6:30 PM	Gate 1	Visitor	Car	2	Off-Street	Pender and Renfrew Lot	
457	6:30 PM	Gate 4	Visitor	Taxi	1			Got dropped off
458	6:30 PM	Gate 4	Visitor	Taxi	1			Got dropped off
459	6:30 PM	Gate 4	Visitor	Transit	1			
460	6:30 PM	Gate 1	Visitor	Transit	1			
461	6:30 PM	Gate 1	Visitor	Transit	1			
462	6:30 PM	Gate 1	Visitor	Transit	1			
463	6:30 PM	Gate 4	Visitor	Taxi	3			Got dropped off
464	6:30 PM	Gate 4	Visitor	Car	3	Off-Street	Lot 7/8	
465	6:30 PM	Gate 4	Visitor	Car	1	Private Property	Unknown	
466	6:30 PM	Gate 4	Visitor	Car	2	Off-Street	Lot 7/8	
467	6:30 PM	Gate 4	Visitor	Car	2	Off-Street	Lot 7/8	
468	6:30 PM	Gate 4	Visitor	Car	2	On-Street	Unknown	
469	6:45 PM	Gate 4	Visitor	Car	3	On-Street	West	
470	6:45 PM	Gate 4	Visitor	Car	5	On-Street	West	
471	6:45 PM	Gate 4	Visitor	Car	2	Off-Street	Lot 7/8	
472	6:45 PM	Gate 4	Visitor	Transit	1			
473	6:45 PM	Gate 4	Visitor	Transit	1			
474	7:00 PM	Miller Gate	Visitor	Bicycle				
475	7:00 PM	Miller Gate	Visitor	Car Share		On-Street	Unknown	Car share
476	7:00 PM	Miller Gate	Visitor	Transit	1			
477	7:00 PM	Miller Gate	Visitor	Car	2	Off-Street	Lot 9B	
478	7:00 PM	Miller Gate	Visitor	Car	2	Off-Street	Lot 16	
479	7:00 PM	Miller Gate	Visitor	Car	2	Off-Street	Lot 9B	
480	7:00 PM	Miller Gate	Visitor	Transit	1			
481	7:00 PM	Miller Gate	Visitor	Car	5	Off-Street	Lot 9B	
482	7:15 PM	Miller Gate	Visitor	Car	6+	Off-Street	Lot 7/8	
483	7:15 PM	Miller Gate	Visitor	Car	2	Off-Street	Lot 7/8	
484	7:15 PM	Miller Gate	Visitor	Car	2	On-Street	Unknown	
485	7:15 PM	Miller Gate	Visitor	Transit	1			
486	7:15 PM	Miller Gate	Visitor	Taxi	4			Got dropped off
487	7:15 PM	Miller Gate	Visitor	Car	6+	Off-Street	Lot 9B	
488	7:15 PM	Miller Gate	Visitor	Car	4	Private Property	Unknown	
489	7:15 PM	Miller Gate	Visitor	Car	2	Off-Street	Lot 7/8	
490	7:15 PM	Miller Gate	Visitor	Transit	1			
491	7:15 PM	Miller Gate	Visitor	Car	4	Other	West	Atrium Inn Vancouver
492	7:15 PM	Miller Gate	Visitor	Car	4	Off-Street	Lot 9B	
493	7:15 PM	Miller Gate	Staff	Car	4	Off-Street		Staff lot
494	7:15 PM	Miller Gate	Visitor	Car	2	Off-Street	Lot 16	
495	7:30 PM	Miller Gate	Visitor	Transit	1			
496	7:30 PM	Miller Gate	Visitor	Car	2	Private Property	Unknown	
497	7:30 PM	Miller Gate	Visitor	Walk	1			
498	7:30 PM	Miller Gate	Visitor	Car	2	On-Street	Unknown	
499	7:30 PM	Miller Gate	Visitor	Car	3	Off-Street	Pender and Renfrew Lot	
500	7:30 PM	Miller Gate	Visitor	Car	5	Off-Street	Lot 9B	

No.	Time	Gate	Purpose	Travel Mode	Passengers	Parking	Location	Other
501	7:30 PM	Miller Gate	Visitor	Car	6+	Off-Street	Lot 7/8	
502	7:30 PM	Miller Gate	Visitor	Car	2	On-Street	Unknown	
503	7:30 PM	Miller Gate	Visitor	Car	2	Private Property	Unknown	
504	7:30 PM	Miller Gate	Visitor	Car	3	On-Street	Unknown	
505	7:30 PM	Miller Gate	Visitor	Car	1	On-Street	Unknown	
506	7:30 PM	Miller Gate	Visitor	Transit	1			
507	7:30 PM	Miller Gate	Visitor	Car	2	On-Street	Unknown	
508	7:30 PM	Miller Gate	Visitor	Car Share		On-Street	Unknown	Car share
509	7:30 PM	Miller Gate	Visitor	Car	2	Off-Street	Lot 9B	
510	7:45 PM	Miller Gate	Visitor	Shuttle	6+			Got dropped off
511	7:45 PM	Miller Gate	Visitor	Car	2	Off-Street	Lot 7/8	
512	7:45 PM	Miller Gate	Visitor	Walk	1			
513	7:45 PM	Miller Gate	Visitor	Transit	1			

B.3 Playland Intercept Survey Sample Questionnaire (2018)

2018 Pacific National Exhibition – Playland
Transportation Survey

1. Time of Arrival: _____
2. Staff or Visitor of the Fair/PNE? Staff Visitor
3. Reason for Visit Today: Playland Concert Both
4. First 3 Digits of Postal Code: _____
5. How did you get to the Fair/PNE?
 Car Walk Transit Bicycle Car Share (check one of the following):
 Car2Go Modo Zipcar EVO
 Other _____
6. If arrived by car, how many people were in your car including yourself?
 1 2 3 4 5 6+
7. If you arrived by car, where did you park (Mark with X on Map)?
 On-street Off-street, i.e., in a parking lot
 Private Properties Elsewhere _____



1. Time of Arrival: _____
2. Staff or Visitor of the Fair/PNE? Staff Visitor
3. Reason for Visit Today: Playland Concert Both
4. First 3 Digits of Postal Code: _____
5. How did you get to the Fair/PNE?
 Car Walk Transit Bicycle Car Share (check one of the following):
 Car2Go Modo Zipcar EVO
 Other _____
6. If arrived by car, how many people were in your car including yourself?
 1 2 3 4 5 6+
7. If you arrived by car, where did you park (Mark with X on Map)?
 On-street Off-street, i.e., in a parking lot
 Private Properties Elsewhere _____



1. Prepared by R.F. Binnie & Associated Ltd.; Performed by TransTech Data Services Ltd.
2. Authorized by the Pacific National Exhibition and City of Vancouver
3. The information collected in this questionnaire is confidential, anonymous, and shall only be used for the Traffic, Parking, and Access Study
4. Updated on July 6, 2018

B.4 Playland Intercept Survey Results (2018)

No.	Time	Purpose	Reason to Visit	Postal Code	City	Travel Mode	Passengers	Parking	Location	Other
1	10:00	Visitor	Playland	V7K	North Vancouver	Car	3	Off-Street	Pender and Renfrew Lot	
2	10:00	Visitor	Playland	V3M		Car	5	Off-Street	Pender and Renfrew Lot	
3	10:00	Visitor	Playland	V6Z		Transit	6+			
4	10:00	Visitor	Playland	Dt Van	Vancouver	Transit	3			
5	10:00	Visitor	Playland	Coq	Coquitlam/Port Coquitlam	Car	5	Off-Street	Pender and Renfrew Lot	
6	10:00	Visitor	Both	Merritt	Merritt	Car	2	Off-Street	Pender and Renfrew Lot	
7	10:15	Visitor	Playland	V5R		Car	3	Off-Street	Lot 16	
8	10:15	Visitor	Playland	V4C		Car	2	Off-Street	Lot 16	
9	10:15	Visitor	Playland	V8N		Car	3	Off-Street	Pender and Renfrew Lot	
10	10:15	Visitor	Playland	V2V		Car	5	Off-Street	Pender and Renfrew Lot	
11	10:15	Staff	Playland	V7E		Car	4	Off-Street	Pender and Renfrew Lot	
12	10:15	Visitor	Playland	V7C		Car	2	Off-Street	Pender and Renfrew Lot	
13	10:15	Visitor	Playland	Richmond	Richmond	Car	6+	Dropped off		
14	10:15	Visitor	Playland	Burnaby	Burnaby	Car	5	Off-Street	Pender and Renfrew Lot	
15	10:15	Visitor	Playland	Burnaby	Burnaby	Car	3	Off-Street	Pender and Renfrew Lot	
16	10:15	Visitor	Playland	Twassesen	Tsawwassen	Car	4	Off-Street	Pender and Renfrew Lot	
17	10:15	Visitor	Playland	V5R		Car	4	Off-Street	Lot 16	
18	10:15	Visitor	Playland	V3Z		Car	4	Off-Street	Lot 16	
19	10:15	Visitor	Playland	V2Y	Langley	Car	3	Off-Street	Lot 16	
20	10:15		Playland	V3W		Car	4	On-Street	South	
21	10:15	Visitor	Playland	Vancouver	Vancouver	Car	3	Dropped off		
22	10:15	Visitor	Both	Vancouver	Vancouver	Car	6+	Off-Street	Pender and Renfrew Lot	
23	10:15	Visitor	Playland	V3W		Car	4	On-Street	South	
24	10:15	Visitor	Playland	V4T		Car	4	Off-Street	Lot 16	
25	10:15	Visitor	Playland	East Vancouver	Vancouver	Car	4	Private Property		

No.	Time	Purpose	Reason to Visit	Postal Code	City	Travel Mode	Passengers	Parking	Location	Other
26	10:30	Visitor	Playland	Vancouver	Vancouver	Car	6+	Off-Street	Pender and Renfrew Lot	
27	10:30	Visitor	Playland	V8A		Other	2	Private Property		MoterBike
28	10:30	Visitor	Playland	V4L		Car	2	Off-Street	Lot 16	
29	10:30	Visitor	Playland	Richmond	Richmond	Transit				
30	10:30	Visitor	Playland	Burnaby South	Burnaby	Car		Dropped off		
31	10:30	Visitor	Playland	Vancouver	Vancouver	Walk				
32	10:30	Visitor	Playland	Surrey	Surrey	Transit				
33	10:30	Visitor	Playland	V5K		Car	3	Off-Street	Lot 16	
34	10:30	Visitor	Playland			Car	2	Off-Street	Lot 16	
35	10:30	Visitor	Playland	Coquitlam	Coquitlam/Port Coquitlam	Car	2	Off-Street	Pender and Renfrew Lot	
36	10:30	Visitor	Playland	Richmond	Richmond	Transit				
37	10:30	Visitor	Playland	Vancouver	Vancouver	Car	4	Off-Street	Pender and Renfrew Lot	
38	10:30	Visitor	Playland	Coquitlam	Coquitlam/Port Coquitlam	Car	6+	Off-Street	Pender and Renfrew Lot	
39	10:45	Visitor	Playland	Vancouver	Vancouver	Transit				
40	10:45	Visitor	Playland	Coquitlam	Coquitlam/Port Coquitlam	Car	3	Private Property	West	
41	10:45	Visitor	Playland	Nanaimo	Nanaimo	Car	2	Private Property	West	
42	10:45	Visitor	Playland	Maple Ridge	Maple Ridge	Car	6+	Off-Street	Pender and Renfrew Lot	
43	10:45	Visitor	Both	Vancouver	Vancouver	Walk				
44	10:45	Visitor	Both	V1E		Car	2	Private Property	West	
45	10:45	Visitor	Playland	V8B		Car	3	Off-Street	Pender and Renfrew Lot	
46	10:45	Visitor	Playland	V7E		Car	3	Off-Street	Pender and Renfrew Lot	
47	10:45	Visitor	Both	V6R		Transit				
48	10:45	Visitor	Both	Vancouver	Vancouver	Car	1	Private Property		
49	10:45	Visitor	Both	V9B		Car	2	Private Property		
50	11:00	Visitor	Playland	V5S		Car	4	Off-Street	Pender and Renfrew Lot	

No.	Time	Purpose	Reason to Visit	Postal Code	City	Travel Mode	Passengers	Parking	Location	Other
51	11:00	Visitor	Both	V9B		Transit				
52	11:00	Visitor	Playland	Vancouver	Vancouver	Car	2	Private Property		
53	11:00	Visitor	Playland	Coquitlam	Coquitlam/Port Coquitlam	Transit				
54	11:00	Visitor	Playland	Vancouver	Vancouver	Walk				
55	11:00	Visitor	Playland	V2X		Car	4	Off-Street	Lot 16	
56	11:00	Visitor	Playland	V7C		Car	2	On-Street	South	
57	11:00	Visitor	Both	Maple Ridge	Maple Ridge	Car	2	On-Street		
58	11:00	Visitor	Playland	V3B	Coquitlam/Port Coquitlam	Car	3	On-Street		
59	11:00	Visitor	Both	V4C		Transit				
60	11:15	Visitor	Playland	Kerrisdale	Vancouver	Car	2	Dropped off		
61	11:15	Visitor	Playland	Burnaby	Burnaby	Car	2	Private Property		
62	11:15	Visitor	Playland	V4N		Car	2	Private Property	West	
63	11:15	Visitor	Playland	V3H		Car	3	Off-Street	Pender and Renfrew Lot	
64	11:15	Visitor	Both	V3V		Car	6+	Off-Street	Pender and Renfrew Lot	
65	11:15	Visitor	Playland	Surrey	Surrey	Transit				
66	11:15	Visitor	Playland	Abbotsford	Abbotsford	Car	5	On-Street	South	
67	11:15	Visitor	Playland	Surrey	Surrey	Transit				
68	11:30	Visitor	Playland	Vancouver	Vancouver	Walk				
69	11:30	Visitor	Playland	Vancouver	Vancouver	Car	3	Private Property	South	
70	11:30	Visitor	Playland	V5B		Transit				
71	11:30	Staff	Playland	Vancouver	Vancouver	Walk				
72	11:30	Visitor	Playland	Whistler	Whistler	Car	5	Private Property	South	
73	11:45	Visitor	Playland	Vancouver	Vancouver	Transit				
74	11:45	Visitor	Playland	West Vancouver	West Vancouver	Car	6+	Off-Street	Lot 16	

No.	Time	Purpose	Reason to Visit	Postal Code	City	Travel Mode	Passengers	Parking	Location	Other
75	11:45	Visitor	Playland	Vancouver	Vancouver	Transit				
76	11:45	Visitor	Both	Vancouver	Vancouver	Car	4	Off-Street	Lot 16	
77	11:45	Visitor	Playland	Vancouver	Vancouver	Car	4	On-Street		
78	11:45	Visitor	Playland	Surrey	Surrey	Car	4	Off-Street	Lot 16	
79	12:00	Visitor	Playland	Surrey Fleetwood	Surrey	Car	5	Off-Street	Pender and Renfrew Lot	
80	12:00	Visitor	Playland	Vancouver	Vancouver	Transit				
81	12:00	Visitor	Both	Nanimo	Nanaimo	Car	6+	Dropped off		
82	12:00	Visitor	Both	Chilliwack	Chilliwack	Car	2			
83	12:00	Visitor	Playland	18th Ave Vancouver	Vancouver	Taxi				
84	12:00	Visitor	Playland	Downtown Vancouver	Vancouver	Transit				
85	12:00	Visitor	Playland	Surrey	Surrey	Car	4	Dropped off		
86	12:15	Visitor	Playland	Vancouver	Vancouver	Transit				
87	12:15	Visitor	Playland	Burnaby (North)	Burnaby	Transit				
88	12:15	Visitor	Playland	Surrey Fleetwood	Surrey	Car	3	Off-Street	Lot 16	
89	12:15	Visitor	Playland	Langley	Langley	Car	4	Dropped off		
90	12:30	Visitor	Playland	Langley	Langley	Car	4	On-Street		
91	12:30	Visitor	Playland	Burnaby	Burnaby	Transit				
92	12:30	Visitor	Playland	Vancouver Yaletown	Vancouver	Transit				
93	12:30	Visitor	Playland	Burnaby	Burnaby	Car	4	On-Street		
94	12:30	Visitor	Playland	Merritt	Merritt	Car	2	Private Property		
95	12:30	Visitor	Playland	Vancouver	Vancouver	Walk				
96	12:30	Visitor	Playland	North Vancouver	North Vancouver	Car	6+	Private Property		
97	12:45	Visitor	Playland	V2V		Car	2	Dropped off		
98	12:45	Visitor	Playland	Vancouver	Vancouver	Transit				
99	12:45	Visitor	Both	Surrey	Surrey	Car	3	Private Property	South	
100	12:45	Visitor	Both	V6J		Car	2	On-Street		

No.	Time	Purpose	Reason to Visit	Postal Code	City	Travel Mode	Passengers	Parking	Location	Other
101	13:00	Visitor	Both	V2J (Prince George)	Prince George	Car	2	Off-Street	Lot 16	
102	13:00	Visitor	Playland	Vancouver	Vancouver	Walk				
103	13:00	Visitor	Playland	Burnaby (Metrotown)	Burnaby	Transit				
104	13:00	Visitor	Playland	Surrey Guildford	Surrey	Transit				
105	13:00	Visitor	Playland	Surrey Guildford	Surrey	Car	2	Private Property	South	
106	13:15	Visitor	Both	Port Coquitlam	Coquitlam/Port Coquitlam	Car		Dropped off		
107	13:15	Visitor	Playland	V3X		Car	6+	On-Street	South	
108	13:15	Visitor	Playland	Surrey Whiterock	Surrey	Car	5	On-Street		
109	13:15	Visitor	Playland	V3L		Car	3	Off-Street	Lot 16	
110	13:15	Visitor	Playland	V3C	Coquitlam/Port Coquitlam	Car	6+	Off-Street	Pender and Renfrew Lot	
111	13:15	Visitor	Playland	V3W (Surrey)	Surrey	Car	4	Dropped off		
112	13:15	Visitor	Playland	V1Z		Car	4	Off-Street	Pender and Renfrew Lot	
113	13:30	Visitor	Playland	Langley	Langley	Car	3	Dropped off		
114	13:30	Visitor	Playland	V7L	North Vancouver	Car	5	Off-Street	Lot 16	
115	13:30	Visitor	Both	Vancouver (Kits)	Vancouver	Car	4	Off-Street	Lot 7/8	
116	13:30	Visitor	Playland	Delta	Delta	Car	6+	Off-Street	Lot 16	
117	13:30	Visitor	Playland	Surrey	Surrey	Car	4	On-Street		
118	13:30	Visitor	Both	Kelowna (V1X)	Kelowna	Transit				
119	13:30	Visitor	Playland	Maple Ridge	Maple Ridge	Car	3	Off-Street	Pender and Renfrew Lot	
120	13:45	Visitor	Playland	Surrey	Surrey	Car	5	On-Street		
121	13:45	Visitor	Playland	Kamloops	Kamloops	Car	4	On-Street	South	
122	13:45	Visitor	Playland	Vancouver	Vancouver	Walk				
123	13:45	Visitor	Both	Vancouver	Vancouver	Transit				
124	13:45	Visitor	Playland	Vancouver	Vancouver	Car	4	On-Street		
125	14:00	Visitor	Playland	V2T		Car	4	Off-Street	Pender and Renfrew Lot	

No.	Time	Purpose	Reason to Visit	Postal Code	City	Travel Mode	Passengers	Parking	Location	Other
126	14:00	Visitor	Both	Richmond	Richmond	Car	2	On-Street	South	
127	14:00	Visitor	Playland	Surrey	Surrey	Car	6+	Private Property	West	
128	14:00	Visitor	Playland	Surrey	Surrey	Car				
129	14:00	Visitor	Playland	Vancouver	Vancouver	Transit				
130	14:00	Visitor	Playland	North Vancouver	North Vancouver	Car	2	Dropped off		
131	14:15	Visitor	Playland	Abbotsford	Abbotsford	Car	3	Off-Street	Lot 9B	
132	14:00	Visitor	Playland	VSB		Car	3	Off-Street	Lot 9B	
133	14:15	Visitor	Playland	V5T		Transit	2			
134	14:15	Visitor	Playland	V7H	North Vancouver	Transit	2			
135	14:15	Visitor	Playland	V3C	Coquitlam/Port Coquitlam	Car	2	On-Street		
136	14:15	Visitor	Both	Broadway	Vancouver	Transit	1			
137	14:15	Visitor	Both	V0M	Harrison Lake	Car	2	Off-Street	Lot 16	
138	14:15	Visitor	Playland			Car	3	Off-Street	Lot 9B	
139	14:15	Visitor	Playland	V3G		Car	4	Off-Street	Lot 16	
140	14:15	Visitor	Playland	Vancouver	Vancouver	Walk				
141	14:15	Visitor	Playland	Burnaby	Burnaby	Car	4	Off-Street	Lot 9B	
142	14:15	Visitor	Playland	White Rock	White Rock	Car	3	Private Property	West	
143	14:15	Visitor	Playland	Abbotsford	Abbotsford	Car	4	Off-Street	Lot 7/8	
144	14:15	Visitor	Both	Surrey	Surrey	Transit				
145	14:15	Visitor	Playland	Delta	Delta	Car	4	Off-Street	Lot 7/8	
146	14:15	Visitor	Playland	V6Y		Transit	2			
147	14:30	Visitor	Both	V2V		Car	3	Off-Street	Lot 16	
148	14:30	Visitor	Playland	V6Y		Car	5	Private Property		
149	14:30	Visitor	Playland	Vancouver	Vancouver	Transit	2			
150	14:30	Visitor	Concert	Abbotsford	Abbotsford	Car	6+	Off-Street	Lot 9B	

No.	Time	Purpose	Reason to Visit	Postal Code	City	Travel Mode	Passengers	Parking	Location	Other
151	14:30	Visitor	Playland	Vancouver	Vancouver	Walk				
152	14:30	Visitor	Both	Chilliwack	Chilliwack	Car	6+	Off-Street	Pender and Renfrew Lot	
153	14:30	Visitor	Playland	Port Coquitlam	Coquitlam/Port Coquitlam	Car	3	Off-Street	Pender and Renfrew Lot	
154	14:30	Visitor	Playland	Burnaby	Burnaby	Transit				
155	14:30	Visitor	Both	New Westminister	New Westminister	Transit				
156	14:30	Visitor	Concert	Surrey	Surrey	Car	3	Dropped off		
157	14:30	Visitor	Concert	Surrey	Surrey	Car	3	Off-Street	Lot 16	
158	14:30	Visitor	Both	V0E	Shushwap	Car	3	Off-Street		
159	14:30	Visitor	Playland	V2X		Car	3	Off-Street	Lot 16	
160	14:30	Visitor	Playland	Delta	Delta	Car	4	On-Street		
161	14:30	Visitor	Playland	Champlain Heights	Champlain Heights	Car	2	On-Street	South-West	
162	14:30	Visitor	Both	North Shore	North Vancouver	Car	3	Off-Street	Pender and Renfrew Lot	
163	14:45	Visitor	Playland	Cheerbrook	Abbotsford	Transit				
164	15:00	Visitor	Playland	Surrey	Surrey	Car	4	Off-Street		
165	15:00	Visitor	Playland	V6K		Taxi	1			
166	15:00	Visitor	Playland	Surrey	Surrey	Car	5	Off-Street	Lot 16	
167	15:00	Visitor	Playland	V2T		Car	3	Off-Street	Lot 16	
168	15:00	Visitor	Playland	V3T		Car	2	On-Street		
169	15:15	Visitor	Playland	V3W		Car	2	On-Street		
170	15:15	Visitor	Both	Richmond	Richmond	Taxi	2			
171	15:15	Visitor	Concert	Calgary	Calgary	Car	2	Dropped off		
172	14:45	Visitor	Playland	Vancouver	Vancouver	Transit				
173	15:15	Visitor	Playland	New Westminister	New Westminister	Car	2	Off-Street	Lot 7/8	
174	15:15	Visitor	Playland	Vancouver	Vancouver	Car	6+	Private Property		
175	15:15	Visitor	Playland	Kerrisdale	Vancouver	Transit				

No.	Time	Purpose	Reason to Visit	Postal Code	City	Travel Mode	Passengers	Parking	Location	Other
176	15:30	Visitor	Both	New Westminister	New Westminister	Transit				
177	15:30	Visitor	Playland	Surrey	Surrey	Car	6+	Off-Street	Pender and Renfrew Lot	
178	15:30	Visitor	Both	Vancouver	Vancouver	Transit				
179	15:30	Visitor	Both	Vancouver	Vancouver	Walk				
180	15:30	Visitor	Playland	New Westminister	New Westminister	Transit				
181	15:30	Visitor	Playland	Abbotsford	Abbotsford	Car	4	On-Street	South	
182	15:30	Visitor	Playland	V59		Transit				
183	15:30	Visitor	Concert	Surrey	Surrey	Car	3	Off-Street	Pender and Renfrew Lot	
184	15:30	Visitor	Concert	Burnaby	Burnaby	Transit				
185	15:45	Visitor	Concert	Mission	Mission	Car	3	Off-Street	Pender and Renfrew Lot	
186	15:45	Visitor	Playland	Burnaby (North)	Burnaby	Transit				
187	15:45	Visitor	Playland	South Vancouver	Vancouver	Car	2	On-Street		
188	15:45	Visitor	Both	Vancouver	Vancouver	Walk				
189	15:45	Visitor	Concert	Mission	Mission	Car	3	On-Street		
190	15:45	Visitor	Playland	Richmond	Richmond	Car	4	Private Property	South	
191	15:45	Visitor	Concert	Vancouver	Vancouver	Car	5	Off-Street	Lot 16	
192	16:00	Visitor	Both	Vancouver	Vancouver	Walk				
193	16:00	Visitor	Concert	Langley	Langley	Car	3	Off-Street	Lot 16	
194	16:00	Visitor	Playland	Delta	Delta	Car	6+	Off-Street	Lot 16	
195	16:00	Visitor	Concert	Vancouver	Vancouver	Transit				
196	16:00	Visitor	Concert	Downtown Vancouver	Vancouver	Transit				
197	16:00	Visitor	Both	Downtown Vancouver	Vancouver	Transit				
198	16:00	Visitor	Playland	V36		Car	4	Off-Street	Lot 16	
199	16:00	Visitor	Both	Downtown Vancouver	Vancouver	Transit				
200	16:15	Visitor	Playland	Vancouver	Vancouver	Transit				

No.	Time	Purpose	Reason to Visit	Postal Code	City	Travel Mode	Passengers	Parking	Location	Other
201	16:15	Visitor	Concert	Richmond	Richmond	Transit				
202	16:15	Visitor	Concert	Downtown Vancouver	Vancouver	Car	4	On-Street	West	
203	16:15	Visitor	Concert	Burnaby	Burnaby	Transit				
204	16:15	Visitor	Playland	Vancouver	Vancouver	Walk				
205	16:15	Visitor	Both	Burnaby	Burnaby	Car	2	Off-Street	Pender and Renfrew Lot	
206	16:15	Visitor	Both	Burnaby	Burnaby	Transit	3			
207	16:30	Visitor	Concert	Surrey	Surrey	Car	2	On-Street	South	
208	16:30	Visitor	Both	Coquitlam	Coquitlam/Port Coquitlam	Car	4	On-Street		
209	16:30	Visitor	Concert	Langley	Langley	Car	3	Dropped off		
210	16:30	Visitor	Concert	Hope	Hope	Car	6+	Off-Street	Lot 7/8	
211	16:30	Visitor	Playland	Vancouver	Vancouver	Walk				
212	16:45	Visitor	Concert	Haney	Maple Ridge	Car	5	Off-Street	Lot 7/8	
213	16:45	Visitor	Playland	Vancouver (Kits)	Vancouver	Car	6+	On-Street		
214	16:45	Visitor	Playland	Vancouver	Vancouver	Walk				
215	16:45	Visitor	Concert	Burnaby	Burnaby	Transit				
216	16:45	Visitor	Concert	V3V		Transit				
217	16:45	Visitor	Both	Maple Ridge	Maple Ridge	Car	4	On-Street	West	
218	17:15	Visitor	Playland	V6Z		Car	2	On-Street	South	
219	17:15	Visitor	Concert	Vancouver	Vancouver	Transit				
220	17:15	Visitor	Both	Vancouver	Vancouver	Car	6+	On-Street	South	
221	17:15	Visitor	Concert	Abbotsford	Abbotsford	Car	3	Off-Street	Pender and Renfrew Lot	
222	17:15	Visitor	Concert	Burnaby	Burnaby	Transit				
223	17:15	Visitor	Concert	Vancouver	Vancouver	Transit				
224	17:30	Visitor	Concert	Vancouver	Vancouver	Car	4	Dropped off		
225	17:30	Visitor	Playland	Vancouver	Vancouver	Walk				
226	17:30	Visitor	Concert	Burnaby	Burnaby	Transit				
227	17:30	Visitor	Concert	Maple Ridge	Maple Ridge	Transit				

Appendix C:

Access Count and Parking Data from TransTech

TransTech Data Services
PNE Traffic Study
Gate Access Pedestrian Counts
Aug 26, 2017

Start Time	1		2		3		4	
	Gate 1		Gate 4		Gate 13		Miller Gate	
	Enter	Exit	Enter	Exit	Enter	Exit	Enter	Exit
10:00	4	0	9	1	0	0	0	0
10:15	44	4	39	2	19	10	92	4
10:30	516	1	254	1	539	3	210	9
10:45	389	9	267	3	360	7	268	1
11:00	494	2	409	9	451	4	421	6
11:15	503	10	321	6	368	6	305	5
11:30	527	8	349	9	291	16	354	11
11:45	387	15	211	10	304	7	357	7
12:00	376	8	163	9	295	4	323	9
12:15	377	18	185	5	199	11	321	20
12:30	405	14	54	6	215	8	298	32
12:45	346	30	81	15	208	26	285	22
13:00	373	26	81	38	243	33	207	31
13:15	363	49	152	26	228	27	333	24
13:30	323	63	110	43	266	58	275	56
13:45	269	80	141	72	216	68	301	66
14:00	341	98	146	67	353	47	610	47
14:15	334	130	91	64	221	79	309	64
14:30	338	92	75	52	182	93	194	92
14:45	239	135	126	71	285	64	258	97
15:00	225	141	54	136	257	87	235	189
15:15	262	199	112	153	199	140	234	152
15:30	242	204	91	98	141	143	220	165
15:45	273	197	86	111	103	190	302	168
16:00	282	232	123	101	106	220	266	201
16:15	321	268	97	118	120	202	278	152
16:30	319	186	88	106	217	215	279	157
16:45	268	218	184	91	188	235	294	193
17:00	251	240	99	113	242	265	251	160
17:15	240	207	115	98	232	241	200	197
17:30	258	302	79	246	160	236	173	233
17:45	246	379	180	182	144	260	169	264
18:00	330	277	105	112	171	234	163	234
18:15	238	290	75	100	179	239	111	233
18:30	149	269	52	117	162	209	119	208
18:45	165	225	88	85	193	187	124	210
19:00	183	242	118	113	225	208	84	186
19:15	137	234	61	89	208	267	100	186
19:30	173	198	46	86	185	198	64	149
19:45	120	166	56	121	173	161	79	196
20:00	168	157	46	109	192	214	73	219
20:15	83	200	44	111	149	188	56	218
20:30	53	228	13	101	65	217	44	172
20:45	96	342	23	366	58	269	5	242
Total	12030	6393	5299	3572	9312	5596	9644	5287

TransTech Data Services
PNE Traffic Study
Gate Access Pedestrian Count
July 15, 2018

Start Time	1	
	Gate 13	
	Enter	Exit
10:00	269	0
10:15	218	3
10:30	216	1
10:45	252	5
11:00	168	11
11:15	235	22
11:30	210	13
11:45	157	20
12:00	195	19
12:15	189	35
12:30	220	64
12:45	144	43
13:00	122	58
13:15	159	90
13:30	131	87
13:45	192	106
14:00	83	131
14:15	162	128
14:30	91	159
14:45	113	127
15:00	85	137
15:15	104	148
15:30	109	207
15:45	70	125
16:00	71	158
16:15	45	164
16:30	41	214
16:45	46	211
17:00	24	150
17:15	18	124
17:30	32	147
17:45	19	205
18:00	9	154
18:15	5	144
18:30	0	128
18:45	3	237
Total	4207	3775

Location: Pacific National Exhibition

Date: Saturday, August 26, 2017

Hours: 10:00 - 21:00

Weather: Clear and dry

Comments: Inventory of each lot was not performed. Maximum capacity of each lot is based on maximum accumulation on survey day. Disabled parking in Lot 9C was full at 14:00. Hastings Racetrack infield parking appeared to peak at approximately 75% full at 15:00.

Survey Time	Parking Capacity & Occupancy, LOT ID (Number of Stalls)											Parking Stall Occupancy, LOT ID (Percentage Occupied)										
	1	2	3	4	5	6	7	8	9	10	Total	1	2	3	4	5	6	7	8	9	10	Total
876	277	28	354	55	41	1329	100	208	43	3311												
10:00	321	39	21	21	3	6	87	29	26	43	596	37%	14%	75%	6%	5%	15%	7%	29%	13%	100%	18%
10:15	315	74	24	28	3	4	118	31	41	43	681	36%	27%	86%	8%	5%	10%	9%	31%	20%	100%	21%
10:30	335	116	20	50	16	4	161	34	65	43	844	38%	42%	71%	14%	29%	10%	12%	34%	31%	100%	25%
10:45	380	165	17	83	32	6	211	39	79	43	1055	43%	60%	61%	23%	58%	15%	16%	39%	38%	100%	32%
11:00	423	224	15	139	33	8	287	42	96	43	1310	48%	81%	54%	39%	60%	20%	22%	42%	46%	100%	40%
11:15	497	268	15	192	31	14	370	44	109	43	1583	57%	97%	54%	54%	56%	34%	28%	44%	52%	100%	48%
11:30	556	276	14	235	28	15	476	47	127	43	1817	63%	100%	50%	66%	51%	37%	36%	47%	61%	100%	55%
11:45	615	277	12	256	34	14	558	48	138	43	1995	70%	100%	43%	72%	62%	34%	42%	48%	66%	100%	60%
12:00	675	277	17	260	34	14	619	48	151	43	2138	77%	100%	61%	73%	62%	34%	47%	48%	73%	100%	65%
12:15	738	277	14	271	30	16	692	50	157	43	2288	84%	100%	50%	77%	55%	39%	52%	50%	75%	100%	69%
12:30	778	277	15	275	37	16	757	51	164	43	2413	89%	100%	54%	78%	67%	39%	57%	51%	79%	100%	73%
12:45	807	277	7	293	43	18	813	53	165	43	2519	92%	100%	25%	83%	78%	44%	61%	53%	79%	100%	76%
13:00	824	277	4	311	49	22	882	53	170	43	2635	94%	100%	14%	88%	89%	54%	66%	53%	82%	100%	80%
13:15	833	277	2	326	46	23	944	54	173	43	2721	95%	100%	7%	92%	84%	56%	71%	54%	83%	100%	82%
13:30	849	277	4	340	50	28	1025	56	178	43	2850	97%	100%	14%	96%	91%	68%	77%	56%	86%	100%	86%
13:45	875	277	5	351	49	29	1105	59	179	43	2972	100%	100%	18%	99%	89%	71%	83%	59%	86%	100%	90%
14:00	875	277	8	350	43	30	1178	61	188	43	3053	100%	100%	29%	99%	78%	73%	89%	61%	90%	100%	92%
14:15	876	277	11	349	45	30	1209	64	192	43	3096	100%	100%	39%	99%	82%	73%	91%	64%	92%	100%	94%
14:30	871	277	17	354	46	30	1219	67	191	43	3115	99%	100%	61%	100%	84%	73%	92%	67%	92%	100%	94%
14:45	870	276	22	353	47	30	1238	68	192	43	3139	99%	100%	79%	100%	85%	73%	93%	68%	92%	100%	95%
15:00	867	276	23	345	50	30	1266	76	192	43	3168	99%	100%	82%	97%	91%	73%	95%	76%	92%	100%	96%
15:15	861	277	26	349	55	29	1281	77	194	43	3192	98%	100%	93%	99%	100%	71%	96%	77%	93%	100%	96%
15:30	854	274	26	345	52	30	1291	82	192	43	3189	97%	99%	93%	97%	95%	73%	97%	82%	92%	100%	96%
15:45	845	276	28	346	48	29	1300	82	198	43	3195	96%	100%	100%	98%	87%	71%	98%	82%	95%	100%	96%
16:00	856	275	28	349	48	29	1318	83	201	43	3230	98%	99%	100%	99%	87%	71%	99%	83%	97%	100%	98%
16:15	858	275	28	349	45	28	1314	88	206	43	3234	98%	99%	100%	99%	82%	68%	99%	88%	99%	100%	98%
16:30	845	264	28	342	48	29	1325	93	206	43	3223	96%	95%	100%	97%	87%	71%	100%	93%	99%	100%	97%
16:45	830	275	28	337	42	30	1325	96	208	43	3214	95%	99%	100%	95%	76%	73%	100%	96%	100%	100%	97%
17:00	834	272	26	342	39	31	1329	100	206	43	3222	95%	98%	93%	97%	71%	76%	100%	100%	99%	100%	97%
17:15	829	272	26	336	35	33	1310	99	204	43	3187	95%	98%	93%	95%	64%	80%	99%	99%	98%	100%	96%
17:30	820	271	25	337	38	37	1316	99	203	43	3189	94%	98%	89%	95%	69%	90%	99%	99%	98%	100%	96%
17:45	815	270	25	330	39	39	1308	97	202	43	3168	93%	97%	89%	93%	71%	95%	98%	97%	97%	100%	96%
18:00	796	271	25	316	39	41	1286	96	202	43	3115	91%	98%	89%	89%	71%	100%	97%	96%	97%	100%	94%
18:15	782	273	23	312	40	39	1268	98	201	43	3079	89%	99%	82%	88%	73%	95%	95%	98%	97%	100%	93%
18:30	776	274	22	301	37	40	1245	93	202	43	3033	89%	99%	79%	85%	67%	98%	94%	93%	97%	100%	92%
18:45	778	270	21	293	37	40	1211	91	189	43	2973	89%	97%	75%	83%	67%	98%	91%	91%	91%	100%	90%
19:00	763	274	21	280	35	39	1195	93	190	43	2933	87%	99%	75%	79%	64%	95%	90%	93%	91%	100%	89%
19:15	746	277	20	270	36	37	1179	95	187	43	2890	85%	100%	71%	76%	65%	90%	89%	95%	90%	100%	87%
19:30	735	275	20	254	29	37	1141	96	179	43	2809	84%	99%	71%	72%	53%	90%	86%	96%	86%	100%	85%
19:45	713	273	19	247	29	36	1117	98	172	43	2747	81%	99%	68%	70%	53%	88%	84%	98%	83%	100%	83%
20:00	701	270	19	241	29	36	1097	98	166	43	2700	80%	97%	68%	68%	53%	88%	83%	98%	80%	100%	82%
20:15	690	276	18	236	31	34	1068	96	164	43	2656	79%	100%	64%	67%	56%	83%	80%	96%	79%	100%	80%
20:30	668	274	18	232	27	34	1023	95	162	43	2576	76%	99%	64%	66%	49%	83%	77%	95%	78%	100%	78%
20:45	649	270	18	229	28	32	990	93	154	43	2506	74%	97%	64%	65%	51%	78%	74%	93%	74%	100%	76%
21:00	631	260	17	217	29	28	950	92	150	43	2417	72%	94%	61%	61%	53%	68%	71%	92%	72%	100%	73%
Minimum	315	39	2	21	3	4	87	29	26	43	596	36%	14%	7%	6%	5%	10%	7%	29%	13%	100%	18%
Maximum	876	277	28	354	55	41	1329	100	208	43	3234	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	98%
Average	730	257	19	275	37	27	987	73	167	43	2615	83%	93%	67%	78%	67%	65%	74%	73%	80%	100%	79%



TransTech Data Services
PNE Traffic Study
Parking Lot Access Counts
July 15, 2018

Start Time	1		2		3		4		5		6		7		8		9		10		11		12		13		14		15		16		17		18		19		20	
	Lot 3		Lot 5		Lot 7		Lot 8		Lot 9		Lot 10		Lot 12		Lot 20		Lot 22		Lot 23		Lot 4		Lot 21		Lot 18		Lot 6		Lot 11		Lot 13		Lot 14		Lot 16		Lot 17		Lot 19	
	Enter	Exit	Enter	Exit	Enter	Exit	Enter	Exit	Enter	Exit	Enter	Exit	Enter	Exit	Enter	Exit	Enter	Exit	Enter	Exit	Enter	Exit	Enter	Exit	Enter	Exit	Enter	Exit	Enter	Exit	Enter	Exit	Enter	Exit	Enter	Exit	Enter	Exit	Enter	Exit
10:00	23	21			37	0	1	1	0	0	0	2	0	0	2	0					6	3	3	1	2	1	13	12	0	1	6	1	4	4	1	0	0	0	1	0
10:15	21	23			27	0	0	0	0	0	1	1	0	0	5	0					8	1	4	1	1	2	5	5	0	0	3	6	10	4	1	0	0	0	3	3
10:30	29	30			30	0	1	1	3	1	1	0	0	0	2	1					9	2	7	2	0	0	6	6	0	0	5	4	15	6	0	0	0	0	2	1
10:45	23	29			18	0	0	0	1	0	2	2	0	0	7	3					3	0	2	0	0	0	1	0	0	1	6	3	10	2	0	0	0	0	3	2
11:00	27	25			25	0	0	0	3	1	1	1	0	0	3	1					8	2	2	1	2	2	6	7	1	1	6	7	11	2	0	0	0	0	4	1
11:15	37	35			24	3	1	0	1	2	0	1	0	0	6	1					7	1	2	1	0	0	8	7	0	0	6	5	10	6	1	1	2	1	5	3
11:30	25	18			16	0	0	1	1	1	3	3	0	0	20	5					6	1	0	0	1	2	6	5	0	1	8	4	10	4	0	0	0	0	5	4
11:45	43	42			20	0	3	2	3	2	3	2	0	0	9	3					11	8	2	2	3	2	6	6	0	0	4	7	10	5	0	0	0	0	7	4
12:00	36	29			15	1	2	2	3	2	0	0	0	0	18	1					7	1	3	2	2	3	4	3	0	0	1	5	13	7	1	0	0	0	6	2
12:15	45	43			9	5	2	1	5	1	1	1	0	0	32	1					9	5	1	1	1	0	8	2	0	0	3	4	18	8	1	0	0	0	2	2
12:30	39	23			6	4	3	4	3	3	2	3	0	0	39	2					2	3	0	1	1	1	16	10	0	0	2	5	15	6	2	1	0	0	3	4
12:45	64	47			4	5	0	0	2	1	0	0	0	0	61	2					0	1	3	1	1	1	14	5	0	0	2	0	23	6	2	0	0	0	8	1
13:00	54	35			11	9	1	1	1	3	1	1	0	0	62	2					4	1	2	0	0	1	12	14	0	1	8	2	26	13	2	0	0	0	11	1
13:15	67	47			5	7	1	1	2	2	1	1	0	0	78	2					2	5	1	3	0	1	5	8	0	0	1	6	25	15	1	0	0	0	7	5
13:30	68	43			8	13	0	0	2	0	2	1	0	0	64	1					6	4	0	0	9	0	3	2	0	0	2	2	11	7	5	0	0	0	6	1
13:45	67	34			3	11	0	0	5	1	0	2	0	0	42	0					8	3	0	1	14	0	6	4	0	0	3	2	9	6	2	1	1	0	2	0
14:00	47	29			6	12	2	2	8	6	1	2	0	0	40	4					2	3	1	2	12	0	8	1	0	0	7	0	9	8	2	0	0	0	6	8
14:15	39	20			7	14	1	2	2	3	1	2	0	0	23	12					2	7	4	1	1	0	9	9	0	0	7	6	10	8	2	1	10	2	3	1
14:30	34	23			4	20	0	0	1	1	3	2	0	0	8	4					4	8	0	1	1	1	6	5	0	1	2	7	2	4	2	1	9	10	2	1
14:45	43	24			5	15	1	1	4	3	2	1	0	0	5	12					3	4	0	1	7	1	9	10	0	0	6	3	11	9	0	0	10	9	10	3
15:00	43	28			9	12	0	0	3	2	0	1	0	0	18	22					2	6	1	1	0	4	11	16	0	0	6	5	5	10	1	0	3	1	1	3
15:15	40	40			12	15	0	0	3	2	2	2	0	0	9	34					2	5	2	1	3	8	6	6	0	0	1	5	22	12	0	1	0	1	2	4
15:30	38	34			11	20	1	0	2	3	3	1	0	0	14	29					3	3	0	4	3	1	8	7	0	0	1	4	18	16	0	0	0	0	4	6
15:45	48	38			16	13	0	0	7	6	0	0	0	0	25	52					5	6	4	1	2	4	6	5	0	0	6	1	21	17	0	0	0	0	4	4
16:00	51	59			11	16	1	1	5	3	0	1	0	0	17	29					16	5	0	2	1	5	6	8	0	0	7	2	14	17	0	1	1	0	4	4
16:15	70	72			11	10	0	0	8	2	3	1	0	0	25	45					13	8	1	1	0	1	10	5	0	0	14	2	13	12	1	1	0	0	5	7
16:30	49	55			13	10	0	0	11	5	3	4	0	0	29	18					8	3	2	1	1	1	11	15	0	0	8	3	12	12	1	4	0	0	6	9
16:45	49	74			12	17	1	0	10	3	2	3	0	0	23	82					3	3	2	1	0	2	6	4	1	0	11	1	6	25	2	1	0	2	7	9
17:00	51	71			11	11	0	1	10	2	2	2	0	0	30	43					2	3	2	2	0	7	4	18	0	1	7	1	3	31	0	4	2	2	3	15
17:15	56	122			12	12	1	1	7	5	2	2	0	0	33	122					2	6	1	0	0	7	5	4	0	0	5	0	10	25	0	4	0	1	5	16
17:30	43	73			10	12	0	0	5	1	1	0	0	0	10	40					1	7	2	5	0	3	5	8	0	0	10	0	10	21	2	6	0	3	2	6
17:45	29	44			4	13	0	0	5	3	5	5	0	0	10	20					1	0	1	1	1	3	0	9	2	1	13	4	7	14	0	2	0	0	7	9
18:00	32	50			1	8	1	0	2	1	2	2	0	0	7	19					1	5	3	3	0	0	2	5	0	0	9	5	5	12	1	0	0	0	5	5
18:15	28	50			3	8	1	2	1	2	2	0	0	0	8	5					3	3	1	2	0	2	4	3	0	0	6	0	12	14	1	2	0	0	3	7
18:30	26	29			2	16	0	0	2	0	1	1	0	0	3	3					0	3	0	1	0	0	1	1	1	0	8	0	4	8	1	1	0	0	4	4
18:45	28	45			3	10	0	0	6	3	1	1	0	0	3	3					7	3	4	4	0	1	6	1	1	2	4	1	10	7	0	0	0	0	0	1
19:00	31	40			2	19	1	1	2	2	1	0	0	0	2	4					3	9	1	2	1	0	7	6	0	0	5	1	5	5	3	0	0	0	2	5
19:15	28	28			3	12	0	1	1	0	3	3	0	0	0	2					0	10	1	5	0	0	8	3	0	2	2	0	7	2	0	2	0	0	1	1
19:30	30	30			1	4	0	0	1	0	3	3	0	0	0	1					4	9	1	0	0	0	15	3	0	0	2	0	8	6	1	0	0	0	2	3
19:45	36	36			0	2	0	0	3	1	0	1	0	0	0	3					3	9	1	1	0	0	19	4	0	0	3	0	7	6	0	2	0	1	1	2
20:00	24	20			0	0	0	0	1	1	1	1	0	0	1	4					0	2	0	0	0	1	13	6	0	0	0	0	1	0	0	0	0	0	1	1
20:15	23	30			0	1	0	0	1	1	2	2	0	0	1	2					4	1	0	0	2	2	12	3	0	0	0	0	3	4	1	0	0	1	1	1
20:30	18	18			4	2	0	0	2	1	4	3	0	0	3	5					7	2	0	0	2	0	8	8	0	0	1	3	4	3	0	0	0	0	0	1
20:45	29	28			0	2	0	0	0	0	1	1	0	0	2	5					9	6	0	0	0	1	7	13	0	0	2	2	3	9	0	0	0	0	3	1
21:00	10	15			1	1	0	0	1	3	0	1	0	2	4	7					6	5	1	1	1	0	2	10	0	0	1	4	6	6	0	1	0	0	6	2
21:15	10	9			1	1	0	0	0	1	1	5	1	0	2	8					4	2	0	1	1	0	5	7	1	0	3	4	7	5	1	1	1	1	3	4
21:30	17	20			1	2	0	0	6																															

TransTech Data Services

PNE Traffic Study

On-Street Parking Counts

Block ID	Location			Vehicle Count	
				Peak	Off-Peak
	On Street	Block Start	Block End	12:00-4:00pm (Aug 26)	2:30-4:00am (Aug 28)
1	Cambridge Street	Kaslo Street	Slocan Street	25	28
2	Cambridge Street	Kootenay Street	Skeena Street	18	25
3	Cambridge Street	Renfrew Street	Kaslo Street	10	13
4	Cambridge Street	Skeena Street	Cassiar Street	14	14
5	Cambridge Street	Slocan Street	Penticton Street	29	46
6	Carlisle Street	Nootka Street	Renfrew Street	3	3
7	Cassiar Street	Dundas Street	Oxford Street	14	8
8	Cassiar Street	E Pender Street	Turner Street	26	18
9	Cassiar Street	Franklin Street	Pandora Street	20	9
10	Cassiar Street	Oxford Street	Cambridge Street	22	9
11	Cassiar Street	Pandora Street	Triumph Street	13	4
12	Cassiar Street	Triumph Street	Dundas Street	15	6
13	Cassiar Street	Turner Street	E Georgia Street	12	5
14	Dundas Street	Kaslo Street	Slocan Street	12	13
15	Dundas Street	Kootenay Street	Skeena Street	26	30
16	Dundas Street	Renfrew Street	Kaslo Street	15	16
17	Dundas Street	Skeena Street	Cassiar Street	27	24
18	Dundas Street	Slocan Street	Penticton Street	20	30
19	E Georgia Street	Cassiar Street	Skeena Street	18	31
20	E Georgia Street	Kaslo Street	Slocan Street	14	26
21	E Georgia Street	Lillooet Street	Windermere Street	24	46
22	E Georgia Street	Nootka Street	Lillooet Street	23	16
23	E Georgia Street	Renfrew Street	Kaslo Street	30	38
24	E Georgia Street	Renfrew Street	Nootka Street	16	31
25	E Georgia Street	Rupert Street	East Alley Street	12	23
26	E Georgia Street	Skeena Street	Kootenay Street	31	49
27	E Georgia Street	Slocan Street	Penticton Street	17	29
28	E Georgia Street	Windermere Street	Rupert Street	27	43
29	E Hastings Street	Kaslo Street	Slocan Street	33	3
30	E Hastings Street	Kootenay Street	Skeena Street	9	1
31	E Hastings Street	Lillooet Street	Renfrew Street	43	0
32	E Hastings Street	Renfrew Street	Kaslo Street	0	0
33	E Hastings Street	Route 1 Street	Windermere Street	0	0
34	E Hastings Street	Skeena Street	Route 1 Street	25	0
35	E Hastings Street	Slocan Street	Penticton Street	42	4
36	E Hastings Street	Windermere Street	Lillooet Street	0	0
37	E Pender Street	Cassiar Street	Skeena Street	21	37
38	E Pender Street	Kaslo Street	Slocan Street	20	24
39	E Pender Street	Lillooet Street	Windermere Street	17	22
40	E Pender Street	Nootka Street	Lillooet Street	21	1
41	E Pender Street	Renfrew Street	Kaslo Street	28	38

Block ID	Location			Vehicle Count	
				Peak	Off-Peak
	On Street	Block Start	Block End	12:00-4:00pm (Aug 26)	2:30-4:00am (Aug 28)
42	E Pender Street	Renfrew Street	Nootka Street	20	13
43	E Pender Street	Rupert Street	East Alley Street	11	10
44	E Pender Street	Skeena Street	Kootenay Street	32	40
45	E Pender Street	Slocan Street	Penticton Street	23	18
46	E Pender Street	Windermere Street	Rupert Street	9	11
47	East Alley	E Georgia Street	Turner Street	5	0
48	East Alley	Turner Street	E Pender Street	16	3
49	Eton Street	Kaslo Street	Renfrew Street	23	33
50	Eton Street	Kootenay Street	Fellowes Street	18	20
51	Eton Street	Penticton Street	Slocan Street	20	27
52	Eton Street	Slocan Street	Kaslo Street	15	27
53	Fellowes Street	Eton Street	Cambridge Street	5	1
54	Fellowes Street	McGill Street	Eton Street	5	3
55	Fellowes Street	Trinity Street	McGill Street	3	3
56	Franklin Street	Cassiar Street	Skeena Street	25	37
57	Franklin Street	Kaslo Street	Renfrew Street	31	42
58	Franklin Street	Penticton Street	Slocan Street	41	26
59	Franklin Street	Skeena Street	Kootenay Street	23	20
60	Franklin Street	Slocan Street	Kaslo Street	22	33
61	Kaslo Street	Cambridge Street	Eton Street	17	7
62	Kaslo Street	Dundas Street	Oxford Street	12	9
63	Kaslo Street	E Georgia Street	Turner Street	2	2
64	Kaslo Street	E Hastings Street	Franklin Street	17	6
65	Kaslo Street	E Pender Street	E Hastings Street	11	6
66	Kaslo Street	Eton Street	McGill Street	8	6
67	Kaslo Street	Franklin Street	Pandora Street	17	7
68	Kaslo Street	McGill Street	Trinity Street	15	9
69	Kaslo Street	Oxford Street	Cambridge Street	2	1
70	Kaslo Street	Pandora Street	Triumph Street	14	7
71	Kaslo Street	Triumph Street	Dundas Street	6	6
72	Kaslo Street	Turner Street	E Pender Street	10	9
73	Kootenay Street	Cambridge Street	Eton Street	6	7
74	Kootenay Street	Dundas Street	Oxford Street	9	11
75	Kootenay Street	E Hastings Street	Franklin Street	7	7
76	Kootenay Street	E Hastings Street	E Pender Street	11	7
77	Kootenay Street	E Pender Street	Turner Street	16	13
78	Kootenay Street	Eton Street	McGill Street	5	6
79	Kootenay Street	Franklin Street	Pandora Street	16	8
80	Kootenay Street	McGill Street	Trinity Street	4	9
81	Kootenay Street	Oxford Street	Cambridge Street	11	14
82	Kootenay Street	Pandora Street	Triumph Street	10	6
83	Kootenay Street	Triumph Street	Dundas Street	11	13
84	Kootenay Street	Turner Street	E Georgia Street	7	16
85	Lillooet Street	E Hastings Street	E Pender Street	16	3
86	Lillooet Street	E Pender Street	Turner Street	26	11

Block ID	Location			Vehicle Count	
				Peak	Off-Peak
	On Street	Block Start	Block End	12:00-4:00pm (Aug 26)	2:30-4:00am (Aug 28)
87	Lillooet Street	Turner Street	E Georgia Street	7	6
88	McGill Street	Kaslo Street	Slocan Street	10	15
89	McGill Street	Kootenay Street	Fellowes Street	10	13
90	McGill Street	Renfrew Street	Kaslo Street	19	22
91	McGill Street	Slocan Street	Penticton Street	11	19
92	Nootka Street	Carlisle Street	E Pender Street	0	1
93	Nootka Street	E Georgia Street	Turner Street	15	0
94	Nootka Street	Turner Street	Carlisle Street	26	2
95	Oxford Street	Cassiar Street	Skeena Street	19	23
96	Oxford Street	Kaslo Street	Renfrew Street	8	7
97	Oxford Street	Penticton Street	Slocan Street	27	35
98	Oxford Street	Skeena Street	Kootenay Street	20	36
99	Oxford Street	Slocan Street	Kaslo Street	18	28
100	Pandora Street	Kaslo Street	Slocan Street	23	34
101	Pandora Street	Kootenay Street	Skeena Street	30	21
102	Pandora Street	Renfrew Street	Kaslo Street	18	31
103	Pandora Street	Skeena Street	Cassiar Street	18	26
104	Pandora Street	Slocan Street	Penticton Street	28	17
105	Penticton Street	Cambridge Street	Eton Street	10	0
106	Penticton Street	Dundas Street	Oxford Street	17	9
107	Penticton Street	E Georgia Street	Turner Street	7	6
108	Penticton Street	E Hastings Street	Franklin Street	6	3
109	Penticton Street	E Pender Street	E Hastings Street	19	7
110	Penticton Street	Eton Street	McGill Street	6	6
111	Penticton Street	Franklin Street	Pandora Street	19	3
112	Penticton Street	McGill Street	Trinity Street	10	11
113	Penticton Street	Oxford Street	Cambridge Street	14	10
114	Penticton Street	Pandora Street	Triumph Street	10	6
115	Penticton Street	Triumph Street	Dundas Street	12	5
116	Penticton Street	Turner Street	E Pender Street	14	11
117	Renfrew Street	Cambridge Street	Oxford Street	0	1
118	Renfrew Street	Dundas Street	Triumph Street	3	3
119	Renfrew Street	E Hastings Street	E Pender Street	0	0
120	Renfrew Street	E Pender Street	Turner Street	6	7
121	Renfrew Street	Eton Street	Cambridge Street	8	4
122	Renfrew Street	Franklin Street	E Hastings Street	11	2
123	Renfrew Street	McGill Street	Eton Street	3	5
124	Renfrew Street	Oxford Street	Dundas Street	7	1
125	Renfrew Street	Pandora Street	Franklin Street	5	7
126	Renfrew Street	Trinity Street	McGill Street	8	7
127	Renfrew Street	Triumph Street	Pandora Street	6	6
128	Renfrew Street	Turner Street	E Georgia Street	4	4
129	Rupert Street	E Pender Street	Turner Street	11	13
130	Rupert Street	Turner Street	E Georgia Street	10	10
131	Skeena Street	Cambridge Street	Oxford Street	7	12

Block ID	Location			Vehicle Count	
				Peak	Off-Peak
	On Street	Block Start	Block End	12:00-4:00pm (Aug 26)	2:30-4:00am (Aug 28)
132	Skeena Street	Dundas Street	Triumph Street	8	6
133	Skeena Street	E Georgia Street	Turner Street	8	5
134	Skeena Street	E Pender Street	E Hastings Street	10	4
135	Skeena Street	Franklin Street	E Hastings Street	4	0
136	Skeena Street	Oxford Street	Dundas Street	0	4
137	Skeena Street	Pandora Street	Franklin Street	24	2
138	Skeena Street	Triumph Street	Pandora Street	15	9
139	Skeena Street	Turner Street	E Pender Street	16	10
140	Slocan Street	Cambridge Street	Oxford Street	15	2
141	Slocan Street	Dundas Street	Triumph Street	12	4
142	Slocan Street	E Hastings Street	E Pender Street	9	1
143	Slocan Street	E Pender Street	Turner Street	24	5
144	Slocan Street	Eton Street	Cambridge Street	9	8
145	Slocan Street	Franklin Street	E Hastings Street	13	5
146	Slocan Street	McGill Street	Eton Street	14	10
147	Slocan Street	Oxford Street	Dundas Street	11	8
148	Slocan Street	Pandora Street	Franklin Street	20	3
149	Slocan Street	Trinity Street	McGill Street	11	9
150	Slocan Street	Triumph Street	Pandora Street	18	5
151	Slocan Street	Turner Street	E Georgia Street	6	11
152	Trinity Street	Kaslo Street	Renfrew Street	29	30
153	Trinity Street	Kootenay Street	Fellowes Street	0	2
154	Trinity Street	Penticton Street	Slocan Street	26	34
155	Trinity Street	Slocan Street	Kaslo Street	32	44
156	Triumph Street	Cassiar Street	Skeena Street	21	33
157	Triumph Street	Kaslo Street	Renfrew Street	16	18
158	Triumph Street	Penticton Street	Slocan Street	24	32
159	Triumph Street	Skeena Street	Kootenay Street	31	38
160	Triumph Street	Slocan Street	Kaslo Street	24	31
161	Turner Street	East Alley Street	Rupert Street	15	23
162	Turner Street	Kaslo Street	Renfrew Street	29	40
163	Turner Street	Kootenay Street	Skeena Street	30	34
164	Turner Street	Lillooet Street	Nootka Street	7	3
165	Turner Street	Nootka Street	Renfrew Street	24	39
166	Turner Street	Penticton Street	Slocan Street	24	25
167	Turner Street	Rupert Street	Windermere Street	14	29
168	Turner Street	Skeena Street	Cassiar Street	20	31
169	Turner Street	Slocan Street	Kaslo Street	19	26
170	Turner Street	Windermere Street	Lillooet Street	34	32
171	Windermere Street	E Georgia Street	Turner Street	11	11
172	Windermere Street	E Pender Street	E Hastings Street	0	0
173	Windermere Street	Turner Street	E Pender Street	14	16
				2656	2513

TransTech Data Services
PNE Traffic Study
On-Street Parking Counts

Block ID	Location			Vehicle Count					
				Peak 12:00-4:00pm (July 15)			Off-Peak 2:30-4:00am (July 15)		
	On Street	Block Start	Block End	Regular	Ride Share	Total	Regular	Ride Share	Total
1	Cambridge Street	Kaslo Street	Slocan Street	21	0	21	33	0	33
2	Cambridge Street	Kootenay Street	Skeena Street	22	0	22	25	0	25
3	Cambridge Street	Renfrew Street	Kaslo Street	15	3	18	14	0	14
4	Cambridge Street	Skeena Street	Cassiar Street	9	0	9	13	0	13
5	Cambridge Street	Slocan Street	Penticton Street	31	0	31	30	0	30
6	Carlisle Street	Nootka Street	Renfrew Street	1	0	1	3	0	3
7	Cassiar Street	Dundas Street	Oxford Street	7	0	7	9	0	9
8	Cassiar Street	E Pender Street	Turner Street	11	0	11	15	0	15
9	Cassiar Street	Franklin Street	Pandora Street	11	0	11	13	0	13
10	Cassiar Street	Oxford Street	Cambridge Street	2	0	2	2	0	2
11	Cassiar Street	Pandora Street	Triumph Street	7	1	8	6	0	6
12	Cassiar Street	Triumph Street	Dundas Street	11	0	11	7	0	7
13	Cassiar Street	Turner Street	E Georgia Street	2	0	2	3	0	3
14	Dundas Street	Kaslo Street	Slocan Street	12	5	17	13	1	14
15	Dundas Street	Kootenay Street	Skeena Street	22	0	22	30	0	30
16	Dundas Street	Renfrew Street	Kaslo Street	11	11	22	12	11	23
17	Dundas Street	Skeena Street	Cassiar Street	21	0	21	29	0	29
18	Dundas Street	Slocan Street	Penticton Street	24	0	24	26	1	27
19	E Georgia Street	Cassiar Street	Skeena Street	22	0	22	30	0	30
20	E Georgia Street	Kaslo Street	Slocan Street	14	0	14	23	0	23
21	E Georgia Street	Lillooet Street	Windermere Street	32	0	32	32	0	32
22	E Georgia Street	Nootka Street	Lillooet Street	24	0	24	12	0	12
23	E Georgia Street	Renfrew Street	Kaslo Street	26	0	26	35	0	35
24	E Georgia Street	Renfrew Street	Nootka Street	20	0	20	29	2	31
25	E Georgia Street	Rupert Street	East Alley Street	13	0	13	16	0	16
26	E Georgia Street	Skeena Street	Kootenay Street	28	0	28	48	0	48
27	E Georgia Street	Slocan Street	Penticton Street	23	0	23	26	0	26
28	E Georgia Street	Windermere Street	Rupert Street	33	0	33	35	0	35
29	E Hastings Street	Kaslo Street	Slocan Street	31	0	31	4	0	4
30	E Hastings Street	Kootenay Street	Skeena Street	10	0	10	3	0	3
31	E Hastings Street	Lillooet Street	Renfrew Street	39	0	39	0	0	0
32	E Hastings Street	Renfrew Street	Kaslo Street	8	0	8	3	0	3
33	E Hastings Street	Route 1 Street	Windermere Street	0	0	0	0	0	0
34	E Hastings Street	Skeena Street	Route 1 Street	8	0	8	0	0	0
35	E Hastings Street	Slocan Street	Penticton Street	18	0	18	3	0	3
36	E Hastings Street	Windermere Street	Lillooet Street	0	0	0	0	0	0
37	E Pender Street	Cassiar Street	Skeena Street	30	0	30	31	0	31
38	E Pender Street	Kaslo Street	Slocan Street	18	0	18	27	0	27
39	E Pender Street	Lillooet Street	Windermere Street	27	0	27	19	0	19
40	E Pender Street	Nootka Street	Lillooet Street	18	0	18	0	0	0
41	E Pender Street	Renfrew Street	Kaslo Street	21	0	21	28	0	28
42	E Pender Street	Renfrew Street	Nootka Street	13	1	14	12	0	12
43	E Pender Street	Rupert Street	East Alley Street	4	0	4	7	0	7
44	E Pender Street	Skeena Street	Kootenay Street	39	0	39	40	2	42
45	E Pender Street	Slocan Street	Penticton Street	14	0	14	17	1	18
46	E Pender Street	Windermere Street	Rupert Street	10	1	11	10	1	11
47	East Alley	E Georgia Street	Turner Street	0	0	0	2	0	2
48	East Alley	Turner Street	E Pender Street	5	0	5	6	0	6
49	Eton Street	Kaslo Street	Renfrew Street	21	3	24	27	0	27
50	Eton Street	Kootenay Street	Fellowes Street	14	0	14	27	1	28
51	Eton Street	Penticton Street	Slocan Street	26	0	26	31	0	31
52	Eton Street	Slocan Street	Kaslo Street	20	1	21	31	0	31
53	Fellowes Street	Eton Street	Cambridge Street	1	0	1	1	0	1
54	Fellowes Street	McGill Street	Eton Street	1	0	1	1	0	1
55	Fellowes Street	Trinity Street	McGill Street	2	0	2	1	0	1
56	Franklin Street	Cassiar Street	Skeena Street	35	0	35	42	0	42
57	Franklin Street	Kaslo Street	Renfrew Street	33	1	34	36	0	36
58	Franklin Street	Penticton Street	Slocan Street	21	0	21	23	0	23

Block ID	Location			Vehicle Count					
				Peak			Off-Peak		
	On Street	Block Start	Block End	12:00-4:00pm (July 15)			2:30-4:00am (July 15)		
				Regular	Ride Share	Total	Regular	Ride Share	Total
59	Franklin Street	Skeena Street	Kootenay Street	21	0	21	24	0	24
60	Franklin Street	Slocan Street	Kaslo Street	20	1	21	31	1	32
61	Kaslo Street	Cambridge Street	Eton Street	8	0	8	3	0	3
62	Kaslo Street	Dundas Street	Oxford Street	9	0	9	5	0	5
63	Kaslo Street	E Georgia Street	Turner Street	3	3	6	7	0	7
64	Kaslo Street	E Hastings Street	Franklin Street	13	0	13	7	0	7
65	Kaslo Street	E Pender Street	E Hastings Street	8	0	8	5	0	5
66	Kaslo Street	Eton Street	McGill Street	4	7	11	2	0	2
67	Kaslo Street	Franklin Street	Pandora Street	25	1	26	9	0	9
68	Kaslo Street	McGill Street	Trinity Street	1	0	1	2	0	2
69	Kaslo Street	Oxford Street	Cambridge Street	7	5	12	6	0	6
70	Kaslo Street	Pandora Street	Triumph Street	12	1	13	28	1	29
71	Kaslo Street	Triumph Street	Dundas Street	5	0	5	5	1	6
72	Kaslo Street	Turner Street	E Pender Street	16	0	16	5	0	5
73	Kootenay Street	Cambridge Street	Eton Street	6	0	6	7	1	8
74	Kootenay Street	Dundas Street	Oxford Street	9	0	9	12	0	12
75	Kootenay Street	E Hastings Street	Franklin Street	8	0	8	7	0	7
76	Kootenay Street	E Hastings Street	E Pender Street	14	0	14	42	0	42
77	Kootenay Street	E Pender Street	Turner Street	11	0	11	6	1	7
78	Kootenay Street	Eton Street	McGill Street	6	0	6	7	0	7
79	Kootenay Street	Franklin Street	Pandora Street	7	0	7	11	1	12
80	Kootenay Street	McGill Street	Trinity Street	3	0	3	5	0	5
81	Kootenay Street	Oxford Street	Cambridge Street	7	0	7	13	0	13
82	Kootenay Street	Pandora Street	Triumph Street	3	0	3	4	0	4
83	Kootenay Street	Triumph Street	Dundas Street	2	0	2	12	0	12
84	Kootenay Street	Turner Street	E Georgia Street	6	0	6	8	0	8
85	Lillooet Street	E Hastings Street	E Pender Street	8	0	8	15	0	15
86	Lillooet Street	E Pender Street	Turner Street	5	0	5	4	0	4
87	Lillooet Street	Turner Street	E Georgia Street	0	0	0	7	0	7
88	McGill Street	Kaslo Street	Slocan Street	9	3	12	11	0	11
89	McGill Street	Kootenay Street	Fellowes Street	5	0	5	2	0	2
90	McGill Street	Renfrew Street	Kaslo Street	10	1	11	28	1	29
91	McGill Street	Slocan Street	Penticton Street	15	0	15	3	1	4
92	Nootka Street	Carlisle Street	E Pender Street	6	0	6	33	0	33
93	Nootka Street	E Georgia Street	Turner Street	4	0	4	4	0	4
94	Nootka Street	Turner Street	Carlisle Street	3	0	3	1	0	1
95	Oxford Street	Cassiar Street	Skeena Street	5	0	5	27	1	28
96	Oxford Street	Kaslo Street	Renfrew Street	15	0	15	12	1	13
97	Oxford Street	Penticton Street	Slocan Street	5	5	10	26	0	26
98	Oxford Street	Skeena Street	Kootenay Street	8	0	8	35	0	35
99	Oxford Street	Slocan Street	Kaslo Street	12	0	12	8	0	8
100	Pandora Street	Kaslo Street	Slocan Street	15	1	16	18	0	18
101	Pandora Street	Kootenay Street	Skeena Street	10	0	10	31	0	31
102	Pandora Street	Renfrew Street	Kaslo Street	8	1	9	26	0	26
103	Pandora Street	Skeena Street	Cassiar Street	13	0	13	23	0	23
104	Pandora Street	Slocan Street	Penticton Street	7	3	10	17	0	17
105	Penticton Street	Cambridge Street	Eton Street	13	0	13	31	0	31
106	Penticton Street	Dundas Street	Oxford Street	4	0	4	7	0	7
107	Penticton Street	E Georgia Street	Turner Street	5	0	5	1	1	2
108	Penticton Street	E Hastings Street	Franklin Street	4	0	4	9	0	9
109	Penticton Street	E Pender Street	E Hastings Street	7	0	7	9	0	9
110	Penticton Street	Eton Street	McGill Street	7	0	7	36	0	36
111	Penticton Street	Franklin Street	Pandora Street	4	0	4	9	0	9
112	Penticton Street	McGill Street	Trinity Street	9	0	9	9	1	10
113	Penticton Street	Oxford Street	Cambridge Street	5	0	5	9	0	9
114	Penticton Street	Pandora Street	Triumph Street	4	0	4	7	0	7
115	Penticton Street	Triumph Street	Dundas Street	4	0	4	6	0	6
116	Penticton Street	Turner Street	E Pender Street	3	0	3	5	0	5
117	Renfrew Street	Cambridge Street	Oxford Street	5	0	5	23	0	23
118	Renfrew Street	Dundas Street	Triumph Street	14	0	14	36	0	36
119	Renfrew Street	E Hastings Street	E Pender Street	7	0	7	37	0	37
120	Renfrew Street	E Pender Street	Turner Street	7	0	7	30	1	31

Block ID	Location			Vehicle Count					
				Peak			Off-Peak		
	On Street	Block Start	Block End	12:00-4:00pm (July 15)			2:30-4:00am (July 15)		
				Regular	Ride Share	Total	Regular	Ride Share	Total
121	Renfrew Street	Eton Street	Cambridge Street	0	0	0	6	0	6
122	Renfrew Street	Franklin Street	E Hastings Street	3	0	3	19	0	19
123	Renfrew Street	McGill Street	Eton Street	0	2	2	7	0	7
124	Renfrew Street	Oxford Street	Dundas Street	1	0	1	31	1	32
125	Renfrew Street	Pandora Street	Franklin Street	15	0	15	23	0	23
126	Renfrew Street	Trinity Street	McGill Street	0	1	1	3	0	3
127	Renfrew Street	Triumph Street	Pandora Street	8	0	8	21	2	23
128	Renfrew Street	Turner Street	E Georgia Street	3	1	4	14	0	14
129	Rupert Street	E Pender Street	Turner Street	0	0	0	1	0	1
130	Rupert Street	Turner Street	E Georgia Street	3	0	3	5	0	5
131	Skeena Street	Cambridge Street	Oxford Street	2	0	2	11	0	11
132	Skeena Street	Dundas Street	Triumph Street	4	0	4	10	0	10
133	Skeena Street	E Georgia Street	Turner Street	3	0	3	10	0	10
134	Skeena Street	E Pender Street	E Hastings Street	4	0	4	30	0	30
135	Skeena Street	Franklin Street	E Hastings Street	5	0	5	0	0	0
136	Skeena Street	Oxford Street	Dundas Street	2	0	2	7	0	7
137	Skeena Street	Pandora Street	Franklin Street	10	1	11	18	1	19
138	Skeena Street	Triumph Street	Pandora Street	3	0	3	10	0	10
139	Skeena Street	Turner Street	E Pender Street	17	0	17	48	0	48
140	Slocan Street	Cambridge Street	Oxford Street	4	0	4	6	0	6
141	Slocan Street	Dundas Street	Triumph Street	3	0	3	4	1	5
142	Slocan Street	E Hastings Street	E Pender Street	9	1	10	4	0	4
143	Slocan Street	E Pender Street	Turner Street	0	1	1	8	2	10
144	Slocan Street	Eton Street	Cambridge Street	3	0	3	3	1	4
145	Slocan Street	Franklin Street	E Hastings Street	11	1	12	0	2	2
146	Slocan Street	McGill Street	Eton Street	7	0	7	4	0	4
147	Slocan Street	Oxford Street	Dundas Street	9	0	9	2	0	2
148	Slocan Street	Pandora Street	Franklin Street	7	0	7	5	0	5
149	Slocan Street	Trinity Street	McGill Street	1	0	1	9	0	9
150	Slocan Street	Triumph Street	Pandora Street	5	1	6	12	1	13
151	Slocan Street	Turner Street	E Georgia Street	9	0	9	5	0	5
152	Trinity Street	Kaslo Street	Renfrew Street	13	2	15	10	0	10
153	Trinity Street	Kootenay Street	Fellowes Street	2	0	2	1	0	1
154	Trinity Street	Penticton Street	Slocan Street	11	0	11	3	1	4
155	Trinity Street	Slocan Street	Kaslo Street	8	0	8	7	0	7
156	Triumph Street	Cassiar Street	Skeena Street	11	0	11	30	0	30
157	Triumph Street	Kaslo Street	Renfrew Street	12	1	13	3	0	3
158	Triumph Street	Penticton Street	Slocan Street	8	0	8	2	0	2
159	Triumph Street	Skeena Street	Kootenay Street	11	0	11	34	1	35
160	Triumph Street	Slocan Street	Kaslo Street	12	0	12	2	0	2
161	Turner Street	East Alley Street	Rupert Street	0	0	0	16	0	16
162	Turner Street	Kaslo Street	Renfrew Street	9	0	9	5	0	5
163	Turner Street	Kootenay Street	Skeena Street	9	0	9	34	0	34
164	Turner Street	Lillooet Street	Nootka Street	11	0	11	7	0	7
165	Turner Street	Nootka Street	Renfrew Street	3	0	3	10	1	11
166	Turner Street	Penticton Street	Slocan Street	5	0	5	32	0	32
167	Turner Street	Rupert Street	Windermere Street	5	0	5	2	0	2
168	Turner Street	Skeena Street	Cassiar Street	15	0	15	27	0	27
169	Turner Street	Slocan Street	Kaslo Street	2	0	2	29	0	29
170	Turner Street	Windermere Street	Lillooet Street	11	1	12	6	0	6
171	Windermere Street	E Georgia Street	Turner Street	5	0	5	9	0	9
172	Windermere Street	E Pender Street	E Hastings Street	6	0	6	0	0	0
173	Windermere Street	Turner Street	E Pender Street	7	0	7	0	0	0

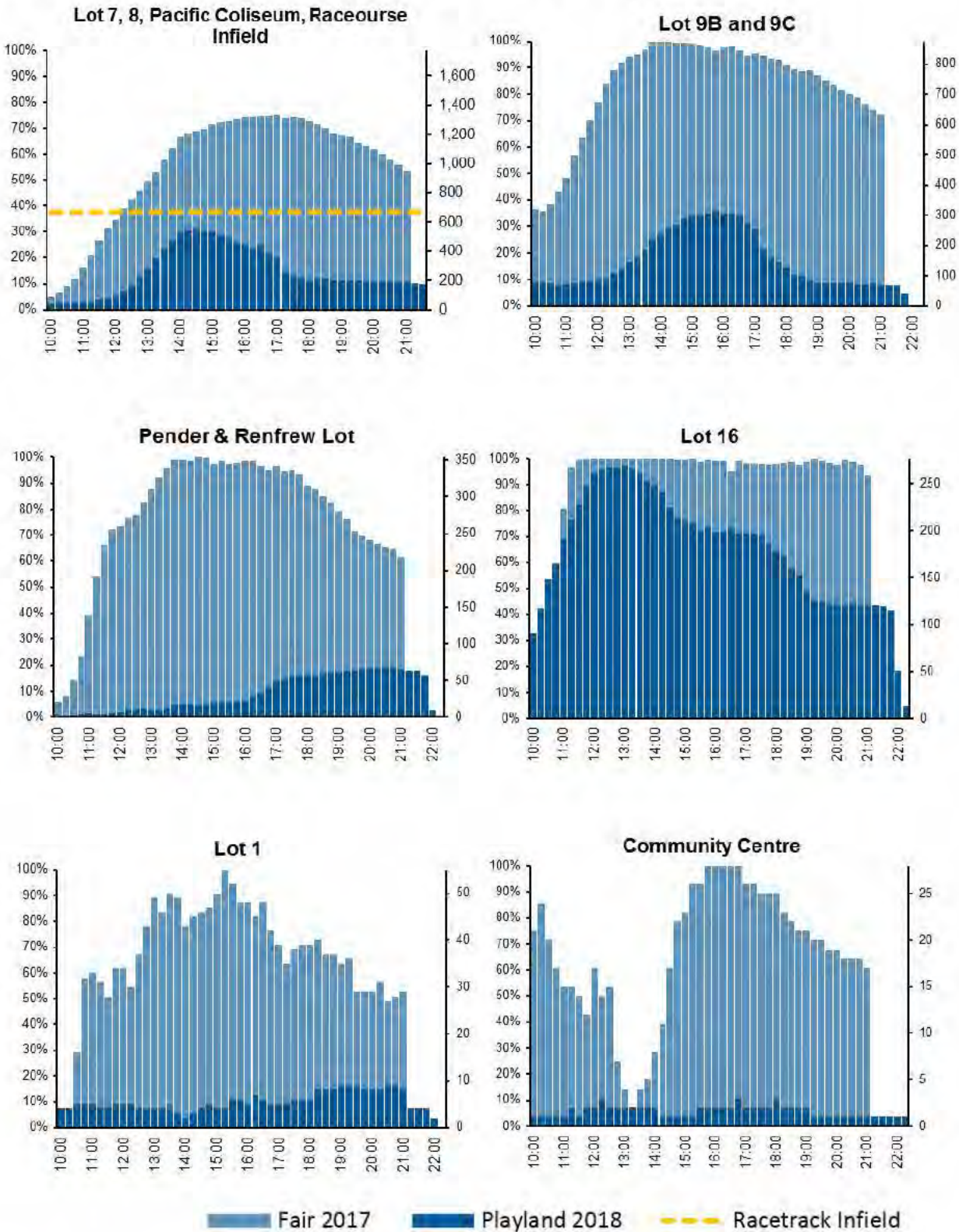
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Appendix D:

Utilization of Each Lot by Time of Day

Utilization of Parking Lots by Time of Day



Appendix E:

Mode Shift Reduction Methodology

MODE SHARE TARGET METHODOLOGY (DRAFT)

A 15% reduction in off-street parking demand is the proposed target for the Hastings Park 2029 off-street parking demand estimates for Hastings Park. Estimate is based on both:

- Personal vehicle trips shifting to walking, biking and transit trips; and
- Personal vehicle trips shifting to taxi and ride-hailing trips.

Regional and Municipal Mode Shifts and Targets

- Based on the intercept survey conducted by TransTech Data Services, the existing personal automobile mode share at Hastings Park is higher than the City of Vancouver but lower than the Metro Vancouver average (compared in **Figure 1-1**)
- Both the City of Vancouver and Metro Vancouver target to increase their walking, cycling and transit mode shares by approximately one-third over existing by 2040 (City of Vancouver Transportation 2040 Plan, 2012, Metro Vancouver Transport 2040 Backgrounder #1 “Vision, Goals, and Targets”, 2011)
- Metro Vancouver has identified that the region is not on track to meet their one-third reduction target by 2040, however, projecting existing trends to 2040 would result in only an approximated 15% increase in walking, cycling and transit mode share (see **Figure 1-2**)

Mode Shift from Personal Vehicular Travel to Taxi and Ride-Hailing Services

- It is challenging to estimate how ride hailing and increasing vehicle autonomy may impact parking demand in the future.
- Ride-hailing services have significantly impacted parking demand in other areas that it has been introduced, up to 25 to 50% in some North American venues where parking is historically challenging (San Diego Tribune, 2018). Some North American studies suggest that locations where parking impact has been the most dramatic include hotels, event centres, arenas, and airports (Walker Consultants, n.d.)
- During the 15-Day Fair when it is challenging to find parking, taxi mode share is already high. On the day of the intercept survey during the Fair, 7% of respondents said they used a taxi to travel to Hastings Park, whereas only 1% used a taxi during the Playland intercept survey. Studies have shown that parking to be the top reason that urban ride hailing users substitute a ride-hailing service in place of driving themselves.
- A recent arena renovation project in Seattle estimates 15% of trips to and from the facility will be by ride hailing by 2020 (Fehr and Peers, 2017). This venue will host NBA games and have a similar regional-draw to Hastings Park.
- Binnie proposes targeting a mode share increase of taxi and ride-hailing services to be 7.5%, as the high taxi mode share observed during the Fair at Hastings Park (see **Figure 1-3**) is a strong indicator that the introduction of ride-hailing services will be a popular transportation option for Hastings Park attendees if introduced in 2019.

Table 1-1: Hastings Park, City of Vancouver and Metro Vancouver Mode Share Comparison

Mode	Hastings Park (Combined 2017 and 2018 Intercept Survey)	Vancouver (2016 Panel Survey)	Metro Vancouver (2011 Trip Diary)
Auto	65%	50%	72%
Transit	22%	16%	14%
Walk	7%	27%	11%
Cycle	1%	7%	2%
Other	5%	0%	2%

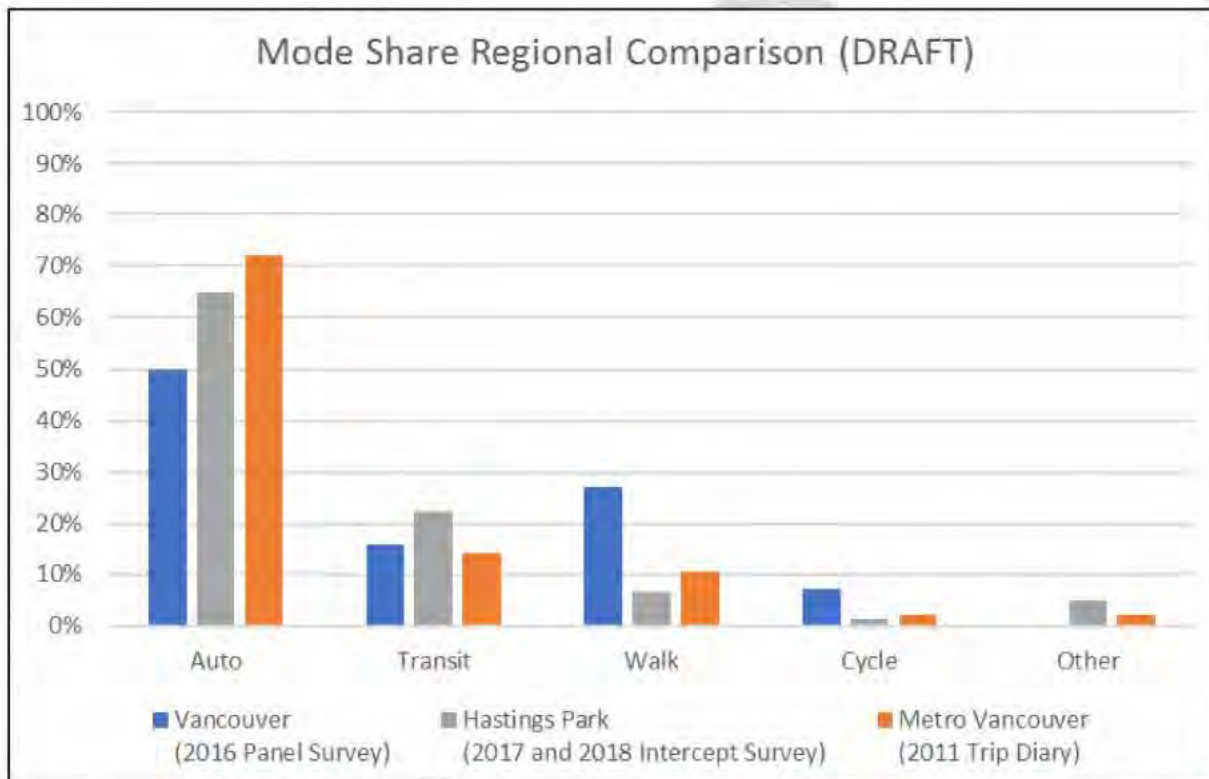


Figure 1-1 Comparing Hastings Park Mode Share from Intercept Survey to Municipal and Regional Averages (Source: 2018 Hastings Park Intercept Survey, 2016 City of Vancouver Panel Survey, 2011 TransLink Trip Diary)

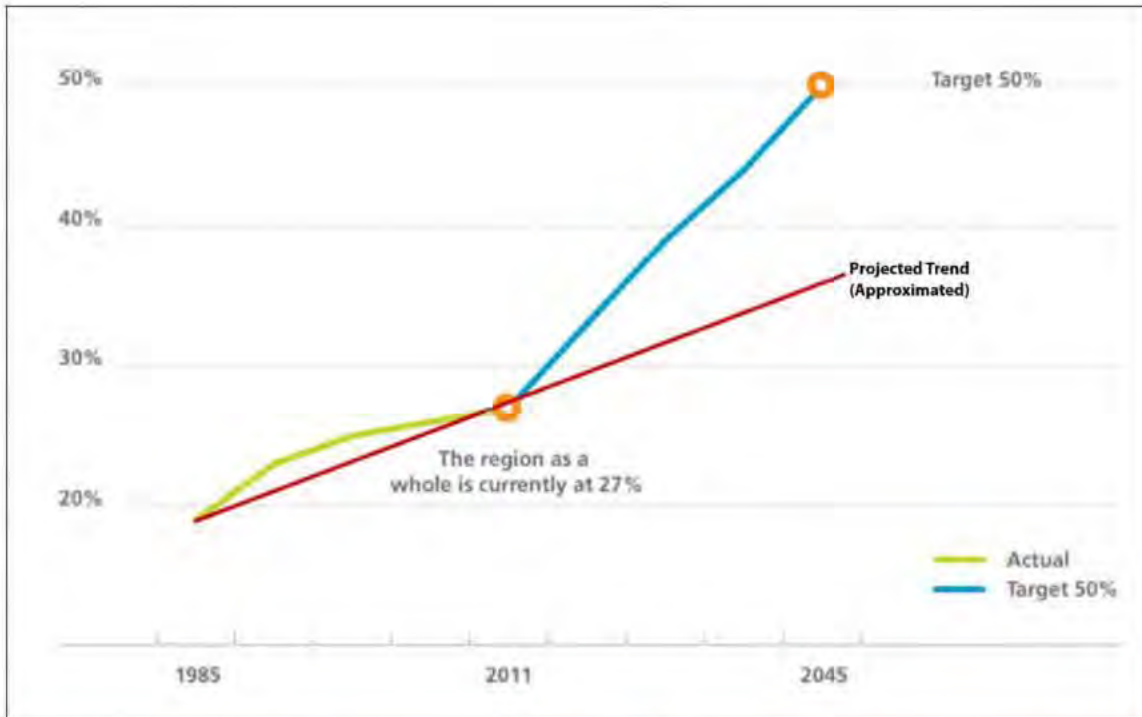
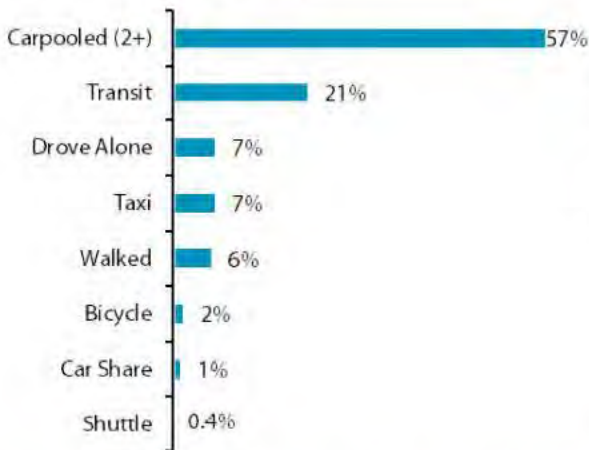


Figure 1-2: Adapted from Metro Vancouver Projected walk, bike and transit mode share target (Source: Metro Vancouver)

Fair Mode Share (2017)



Playland Mode Share (2018)

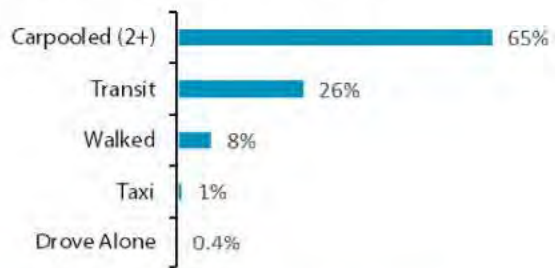


Figure 1-3: Existing Mode Shares during Playland and the Fair (Source: TransTech Data Services)

"BACKGROUND #1: Vision, Goals, and Targets." *TransLink*,
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Steele, Jeanette. "Ace Parking Says Uber, Lyft Have Cut Parking Business up to 50% in Some Venues." *Sandiegouniontribune.com*, 26 Feb. 2018,
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Appendix F:

Synchro Results (To be Provided)