2024 ONE PLANET LIVING APPENDIX

One Planet Living® | A framework by Bioregional

zibi

APPENDIX A: HEALTH & HAPPINESS

HH1, HH2, HH4

FIGURE 1

Resident responses to **"How would you rate your overall happiness?"** (Scale of 1 to 5)

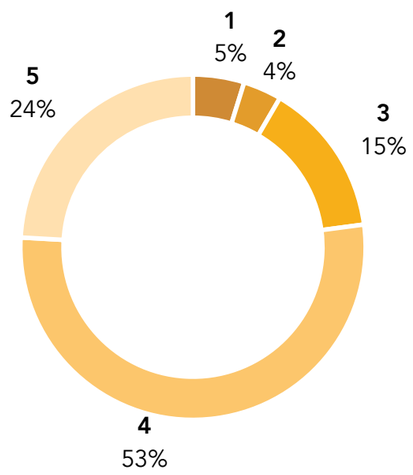


FIGURE 2

Resident responses to **"Do you feel involved in the Zibi community?"**

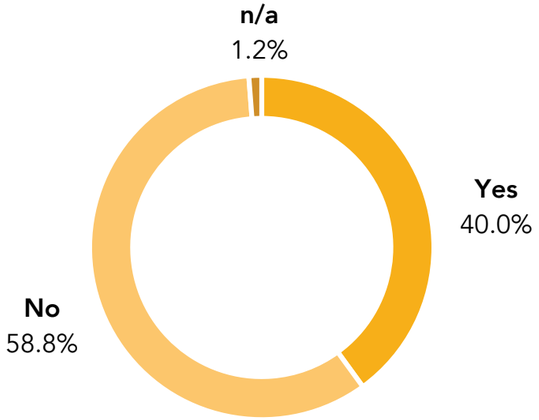
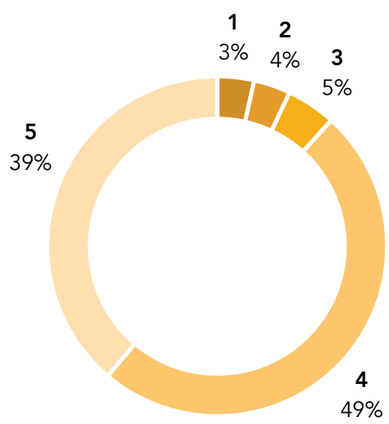


FIGURE 3

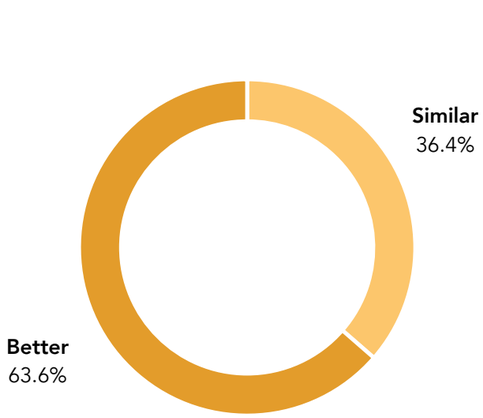
Resident responses to **"How would you rate your overall satisfaction with your health?"** (Scale of 1 to 5)



HH5

FIGURE 4

Staff responses to **"How does your experience working at Zibi compare to other places of employment?"**



APPENDIX B: EQUITY & LOCAL ECONOMY

ELE1

TABLE 1

Affordable housing at Zibi.

BLOCK	NUMBER OF UNITS	NUMBER OF AFFORDABLE UNITS	AFFORDABLE UNITS (%)
10 - Aalto Suites	162	162	100%
11 - Aalto II	148	41	28%
13 - O Condos	70	0	0%
205A - Kanaal Condos	71	0	0%
206 - Voda	207	19	9%
TOTAL	**658**	**222**	**34%**

ELE5

TABLE 2

Events hosted at Zibi in 2024.

DATE	EVENT	EVENT TYPE	NUMBER OF ATTENDEES
Feb. 29 to Mar. 2	Winter Beer Fest	Event	2000
Apr. 19	Ashbury College Tour	Site tour	18
Apr. 22	FCM Tour	Site tour	67
May 7 to 23	Body Balance Yoga	Workshop	n/a
May 18	Garden workshop	Community workshop	10
June 11	Bike Maintenance Workshop	Workshop	30
June 18	Meet Your Bees	Community workshop	12
June 18	Invest Canada Tour	Site tour	70
June 27	Bike Maintenance Workshop	Workshop	30
July 4	Experiences Canada Tour	Site tour	60
Jul 18 to Aug 15	National Art Centre Dance Series	Event	150
Jul. 23	NSERC HyTEM Tour	Site tour	20
Jul. 27	Pop-up Cinema	Event	300
Aug 10	Repair Café	Workshop	145
Aug. 16 to Sep. 22	Cirque du Soleil	Event	70,000
Aug. 21	Ice cream social	Community event	65
Oct. 3	ZCU tour	Community event	60
Oct. 9	Harvest BBQ	Community event	100
Nov. 2	Repair Café	Workshop	153
Nov. 2	Unroll the Mat Yoga	Workshop	n/a
Nov. 5	REB Tour	Site tour	17
Nov. 23	Nostalgic Night Market	Event	1,000
Nov. 27	Honey Jarring	Community workshop	17
Dec. 4 to 8	Illumination - Alex in Wonderland	Event	2,000
Dec. 4	Holiday Party	Community event	100
Dec. 5	RCDSB Valour Highschool Tour	Site tour	50
Dec. 6	CanUrb Tour	Site tour	15
Dec. 7 to 8	Not Your Average Holiday Market	Event	1,000
TOTAL	**28**		**77489**

APPENDIX C: CULTURE & COMMUNITY

CC3

TABLE 1

Art installed at Zibi (new bolded).

LOCATION	DESCRIPTION	ARTIST	ORIGIN
Lobby, O Condos	Artwork	Frank Polson	Timiskaming First Nation
Model suite, O Condos	Artwork	Frank Polson	Timiskaming First Nation
Wasa Zibi Plaza	Bike Rack	Karl Chevrier	Timiskaming First Nation
Zibi House	Rock benches	Amy Thompson	Local
Model suite, Kanaal	Artwork	Brendan A. de Montigny	Local
Eddy Street	"We are Seeds" mural	Claudia Gutierrez with assistance from Kiana Meness	Mexico/Ottawa and Pikwakanagan First Nation
Wasa Zibi Plaza	"Water Woman"	Naomi Blondin	Kitigan Zibi First Nation and French Canadian
OPL Centre	Artwork	Kiana Meness	Pikwakanagan First Nation
Lobby, Aalto	"Sister Water Spirit"	PJ Leroux	Pikwakanagan First Nation
Model suite, Aalto	"Centre"	Nalakwsis	Whapmagoostui, QC
Amenity space, Aalto	“Bimitigweyaa: The River Flows Along"	Emily Kewageshig	Saugeen First Nation
Zibi office	"Blue Jays and Morning Berries"	Wayne Mckenzie	Timiskaming First Nation
Lounge, Block 11	n/a	Wayne Mckenzie	Timiskaming First Nation
Lounge, Block 11	n/a	Suny Jacobs	Indo Canadian
Lobby, Block 11	Custom	Annie Pillaktuaq	Iqualuit, Nunavut
Lobby, Block 11	Culture of Wealth	Annie Pillaktuaq	Iqualuit, Nunavut
Block 206	**Custom Work**	**Annie Pillaktauq**	**Iqualuit, Nunavut**
Block 206	**Untitled**	**Quavavau Manumie**	**Cape Dorset, Nunavut**
Block 206	**Untitled**	**Quavavau Manumie**	**Cape Dorset, Nunavut**
Block 206	**Untitled**	**Quavavau Manumie**	**Cape Dorset, Nunavut**
Block 206	**Stock Art (11 pieces)**	**Renwil**	**N/A**
Chaudiere Island	**Sunshapes**	**Memengweshii Council**	**Pikwakanagan First Nation and Kitigan Zibi**
Tesasini Park	**Rock Carvings**	**Solomon King**	**Neyaashiinigmiing unceded territory**
Tesasini Park	**Bronze Medallions**	**Various members of the Indigenous community living on the territory of the Algonquin Anishinabe**	**Algonquin Territory**
Zibi Office	**n/a**	**PJ Leroux**	**Pikwakanagan First Nation**
Zibi Office	**n/a**	**PJ Leroux**	**Pikwakanagan First Nation**
Zibi Office	**n/a**	**PJ Leroux**	**Pikwakanagan First Nation**

CC6, CC7

FIGURE 1

Resident responses to "How many neighbours do you know?"

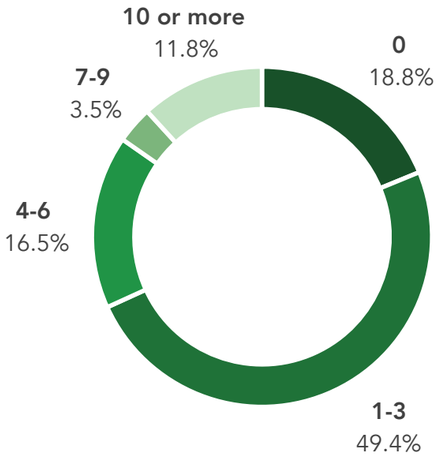


FIGURE 2

Resident responses to "Please rate how important environmental and sustainability issues are to you."

(Scale of 1 to 5)

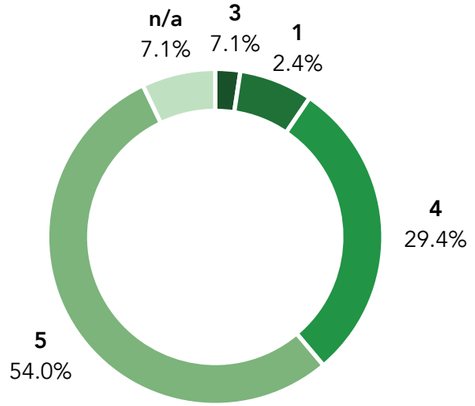
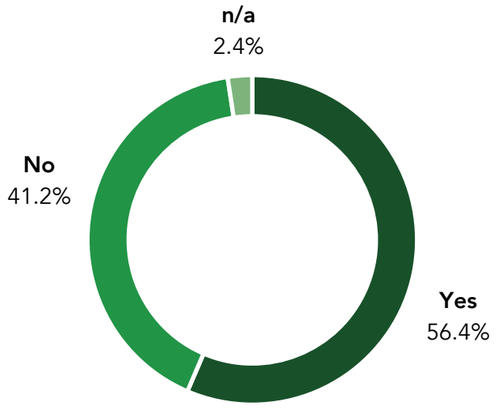


FIGURE 3

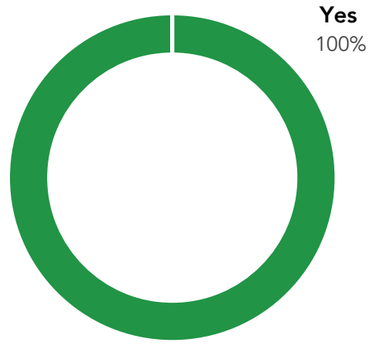
Resident responses to "Would you say that your environmental and sustainability awareness has increased in the last year?"



CC7

FIGURE 4

Staff responses to "Would you say that your environmental and sustainability awareness has increased in the last year?"



APPENDIX D: LAND & NATURE

LN2

TABLE 1

Site area dedicated to park space.

SPACE	SIZE (M²)	% OF TOTAL PARK SPACE	% OF TOTAL ZIBI SPACE
Zibi	137,593		
Parks (14% target)	19,263		
Pangishimo	2,500	13%	2%
Headstreet Square	1,600	8%	1%
Tesasini	6,100	32%	4%
Wasa Zibi Plaza	1,963	10%	1%

TABLE 2

Flora planted or found in public spaces to date (Pangishimo Park (P), Head Street Square (H), Wasa Plaza (W), Streetscapes(S), Citizen Science (CS)).

SCIENTIFIC NAME	COMMON NAME	CULTURALLY OR HISTORICALLY SIGNIFICANT	REINTRODUCED (NOT FOUND IN BASELINE)	QUANTITY*	SITE
NATIVE SPECIES					
Abies balsamea	Balsam fir	✓	✓	7	W
Acer rubrum	Red maple	✓		6	W
Acer saccharinium	Silver maple	✓	✓	7	P
Acer saccharum	Sugar maple	✓	✓	13	P,W,S
Achillea millefolium	Common yarrow		✓	n/a	CS
Aesculus glabra	Ohio buckeye	✓	✓	2	T
Agastache foeniculum	Anice hyssop	✓	✓	81	P,H
Ageratina altissima	White snakeroot		✓	n/a	CS
Amelancher canadensis	Serviceberry	✓	✓	27	H,W,S
Amelanchier laevis	Allegheny serviceberry		✓	10	T
Aronia melanocarpa	Black chokeberry		✓	20	P,H
Artmesia ludoviciana	White sagebrush	✓	✓	66	P
Athyrium filix-femina	Lady fern		✓	26	H
Betula alleghaniensis	Yellow Birch	✓	✓	16	T
Betula papyrifera	Paper birch	✓	✓	15	P
Bouteloua curtpendula	Sideoats grama		✓	12	P
Calamagrostis canadensis	Canada bluejoint		✓	244	P,H,W,S
Calystegia sepium	Hedge bindweed			n/a	CS
Carex muskingumensis	Palm sedge		✓	150	P,H
Carex pensylvanica	Oak sedge		✓	55	H,W
Carex vulpinoidea	Fox sedge		✓	97	P
Carya ovata	Shagbark hickory	✓	✓	5	T
Celtis occidentalis	Common hackberry	✓	✓	22	H,W,S
Comptonia peregrina	Sweet fern	✓	✓	18	P
Cornus racemosa	Gray dogwood		✓	50	T
Cornus sericea	Red osier dogwood	✓		31	P,H
Corylus americana	American hazel		✓	10	T
Deschampsia cespitosa	Tufted hairgrass		✓	534	P,H,W,S
Diervilla lonicera	Northern bush honeysuckle			201	P,H,W
Echinacea purpurea	Purple coneflower		✓	n/a	CS

TABLE 3

Fauna found at Zibi in 2024.

SCIENTIFIC NAME	COMMON NAME	NEW (NOT FOUND IN BASELINE)	SITING*
Actitis macularius	Spotted Sandpiper		DB
Agelaius phoeniceus	Red-winged black bird		CS
Anas platyrhynchos	Mallard		DB
Antigone canadensis	Sandhill crane	✓	CS
Aphis nerii	Oleander aphid		CS
Ardea alba	Great Egret		DB
Ardea herodias	Great blue heron		CS
Argia moesta	Powdered dancer		CS
Astur cooperii	Cooper's Hawk	✓	DB
Bombus griseocollis	Brown-belted bumble bee		CS
Bombus impatiens	Common eastern bumble bee		CS
Bombycilla cedrorum	Cedar Waxwing		DB
Branta canadensis	Canada goose		CS
Bucephala albeola	Bufflehead		DB
Calidris pusilla	Semipalmated Sandpiper	✓	DB
Cardinalis cardinalis	Northern Cardinal		DB
Castor canadensis	Canadian beaver		CS
Cathartes aura	Turkey vulture		CS
Cepaea nemoralis	Brown-lipped snail		CS
Chaetura pelagica	Chimney Swift		DB
Charadrius vociferus	Killdeer		CS
Colaptes auratus	Northern Flicker		DB
Columba livia	Rock Pigeon		DB
Corvus brachyrhynchos	American Crow		DB
Corvus corax	Common Raven		DB
Dissosteira carolina	Carolina grasshopper		CS
Dryocopus pileatus	Pileated Woodpecker		DB
Eristalis tenax	Common drone fly		CS
Falco sp.	Falcon sp.		DB
Family perlidae	Common stonefly		CS
Genus Larus	Large white-headed gull		CS
Genus melanoplus	North american spur-throated grasshopper		CS
Haemorhous mexicanus	House Finch	✓	DB

SCIENTIFIC NAME	COMMON NAME	CULTURALLY OR HISTORICALLY SIGNIFICANT	REINTRODUCED (NOT FOUND IN BASELINE)	QUANTITY*	SITE
Echinocystis lobata	Wild cucumber		✓	n/a	CS
Eupatorium maculatum	Spotted joe-pye weed	✓	✓	5	P
Fagus frandifolia	American beech	✓	✓	2	W
Geranium maculatum	Wild geranium	✓	✓	155	P,H
Gillenia trifoliata	Bowman's root		✓	15	P
Ginko biloba	Maidenhair tree		✓	5	H
Heliopsis helianthoides	False sunflower	✓	✓	30	P,W
Hierochloe odorata	Sweet grass		✓	139	P
Iris versicolor	Blue flag iris		✓	160	T
Juniperus virginiana	Esatern red cedar			10	T
Myrica pensylvanica	Northern bayberry		✓	17	P
Oenothera biennis	Common evening-primrose	✓		n/a	CS
Osmunda cinnamonea	Cinnamon fern	✓	✓	36	H,S
Ostrya virginiana	Ironwood	✓	✓	3	S
Parthenocissus quinquefolia	Virginia creeper (vine)			7	S
Penstemon hirsutus	Hairy beardtongue		✓	205	H,S
Picea glauca	White spruce	✓		2	P
Pinus strobus	Eastern white pine	✓		9	P,W
Populus deltoides	Eastern cottonwood			n/a	CS
Populus grandidentata	Bigtooth aspen	✓	✓	23	W
Populus tremoloides	Trembling (quaking) aspen	✓		24	P,W
Quercus macrocarpa	Burr oak	✓		3	W
Quercus palustris	Pin oak		✓	5	P
Rhus aromatica	Frangrant sumac			55	H
Rhus typhina	Staghorn sumac	✓		n/a	CS
Ribes aureum	Golden currant		✓	2	P
Rudbeckia lacinata	Cutleaf coneflower		✓	25	P
Salix discolor	Pussy willow	✓		32	T
Salix lucida	Shining willow	✓	✓	7	S
Salix nigra	Black willow	✓	✓	16	T
Sambucus canadensis	American elderberry	✓	✓	2	S
Schizachyrium scoparium	Little bluestem		✓	386	P,H,W
Solidago juncea	Early goldenrod		✓	n/a	CS
Sorghastrum nutans	Indian grass	✓	✓	119	H,S
Spirea alba	White meadosweet	✓	✓	10	H
Sporabolus heterolepsis	Prairie dropseed		✓	514	P,H,W,S
Symphoricarpos albus	Common snowberry		✓	3	P

SCIENTIFIC NAME	COMMON NAME	NEW (NOT FOUND IN BASELINE)	SITING*
Haliaeetus leucocephalus	Bald Eagle		DB
Harmonia axyridis	Asian lady beetle		CS
Hippodamia variegata	Variegated lady beetle		CS
Hirundinidae sp.	Swallow sp.	✓	DB
Hirundo rustica	Barn Swallow		DB
Larus delawarensis	Ring-billed Gull		DB
Larus smithsonianus	American Herring Gull	✓	DB
Melospiza melodia	Song Sparrow		DB
Mergus merganser	Common Merganser		DB
Nannopterum auritum	Double-crested cormorant	✓	CS
Nerodia sipedon	Northern watersnake		DB
Order trichoptera	Caddisfly		CS
Pandion haliaetus	Osprey		CS
Petrochelidon pyrrhonota	Cliff Swallow		DB
Poecile atricapillus	Black-capped chickadee		CS
Polistes dominula	European paper wasp		CS
Quiscalus quiscula	Common Grackle		DB
Sayornis phoebe	Eastern Phoebe		DB
Sceliphron caementarium	Yellow-legged mud-dauber wasp		CS
Scutigera coleoptrata	House centipede		CS
Setophaga petechia	Yellow Warbler		DB
Sphex pensylvanicus	Great black digger wasp		CS
Spinus tristis	American Goldfinch		DB
Stelgidopteryx serripennis	Northern Rough-winged Swallow		DB
Sturnus vulgaris	European Starling		DB
Tachycineta bicolor	Tree Swallow		DB
Tamias striatus	Eastern chipmunk		CS
Tringa flavipes	Lesser Yellowlegs	✓	DB
Turdus migratorius	American Robin		DB
Vireo gilvus	Warbling Vireo		DB
Zenaida macroura	Mourning dove		CS
Zonotrichia albicollis	White-throated Sparrow		DB
TOTAL	**65**	**8**	

*Sightings via Citizen Science (CS) on iNaturalist or via public databases (DB).

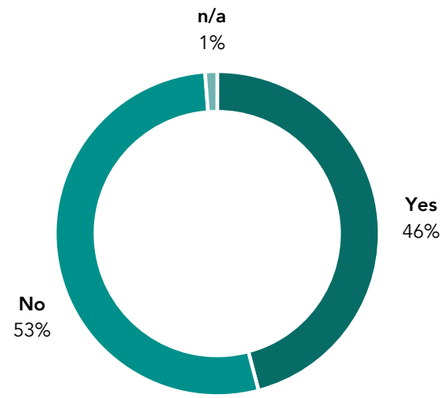
SCIENTIFIC NAME	COMMON NAME	CULTURALLY OR HISTORICALLY SIGNIFICANT	REINTRODUCED (NOT FOUND IN BASELINE)	QUANTITY*	SITE
Taxus canadensis	Canada yew		✓	10	T
Tilia americana	Basswood	✓		7	P
Viburnum acerifolium	Mapleleaf viburnum		✓	10	T
Viburnum cassinoides	Wild raisin/whiterod	✓		4	S
Viburnum lentago	Nannyberry viburnum		✓	10	T
TOTAL	**72**	**43**	**55**	**3792**	
NON-NATIVE SPECIES					
Daucus carota	Wild carrot			n/a	CS
Frangula alnus	Glossy buckthorn			n/a	CS
Lythrum salicaria	Purple loosestrife		✓	n/a	CS
Matricaria chamomilla	German chamomile		✓	n/a	CS
Morus alba	White mulberry		✓	n/a	CS
Securigera varia	Purple crownvetch		✓	n/a	CS

*Quantity specified in designs; survival rate may be lower.

LN4

FIGURE 1

Resident responses to **"Has your time in nature increased since living at Zibi?"**



APPENDIX E: SUSTAINABLE WATER

SW1

TABLE 1

Residential water meter readings and estimated resident daily potable water consumption.

O CONDOS	RESULTS	NOTE
Residential Consumption	4,403.3 m^3	370 days (Jan. 11, 2024 to Jan. 15, 2025)
# residents	103	Estimate
Potable water consumed per resident, per day (estimated)	0.116 m^3	116 L

KANAAL	RESULTS	NOTE
Residential Consumption	4,837.35 m^3	366 days (Jan. 2024 to Jan. 2025)
# residents	98	Estimate
Potable water consumed per resident, per day (estimated)	0.135 m^3	135 L

VODA	RESULTS	NOTE
Residential Consumption	4,276.89 m^3	April to December, inclusive
# residents	Variable	New move-ins monthly; results based on average of monthly consumption amounts
Potable water consumed per resident, per day (estimated)	0.155 m^3	155 L

SW3

TABLE 2

Sewage conveyance (toilets) with non-potable water.

BLOCK	# OF TOILETS	# TOILETS FED BY CISTERN
2/3	18	0
10	229	0
11	220	0
13	98	48
205A	107	0
206	379	0
207	30	0
208	20	0
210	8	0
211	80	0
TOTAL	**1189**	**48**
% OF SEWAGE CONVEYANCE THROUGH NON-POTABLE WATER	**4.04%**	

SW4

TABLE 3

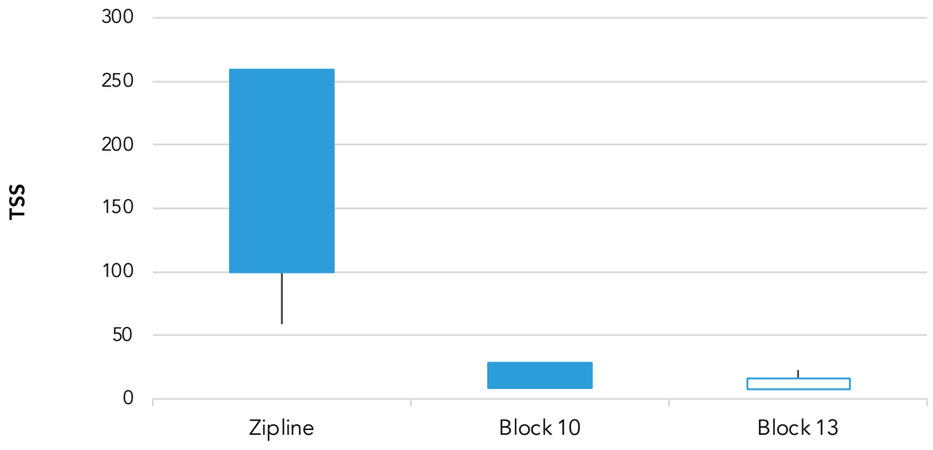
Zibi stormwater Total Suspended Solids (TSS) results.

SAMPLE LOCATION	DATE	TSS (mg/L)
Zipline	Nov 21	259
	Sep 25	59
	May 8	100
Block 10	Sep 25	29
	May 8	9
Block 13	Nov 21	8
	Sep 25	23
	May 8	16

Allowable Limit per the Sewer Use Storm Bylaw, Ottawa is 15 mg/L.
https://ottawa.ca/en/living-ottawa/laws-licences-and-permits/laws/laws-z/sewer-use-law-no-2003-514

FIGURE 1

Zibi stormwater Total Suspended Solids (TSS) results.



APPENDIX F: LOCAL & SUSTAINABLE FOOD

LSF1

TABLE 1

Garden spaces.

BLOCK	FOOD GROWING AREA/ GARDEN SPACE (m^2)	# OF UNITS	RATIO OF FOOD-GROWING SPACES TO HOUSEHOLDS (1.4 m^2 PER HOUSEHOLD)
10 - Aalto Suites	25.64	162	1:8
11 - Aalto II	25.75	148	1:8
13 - O Condos	17.92	70	1:5
205A - Kanaal	n/a	71	n/a
206 - Voda	28.24	207	1:10
TOTAL	**97.55**	**658**	**1:9**

LSF2, LSF3

FIGURE 1

Resident responses to "What percentage of food that you consume is from local sources?"

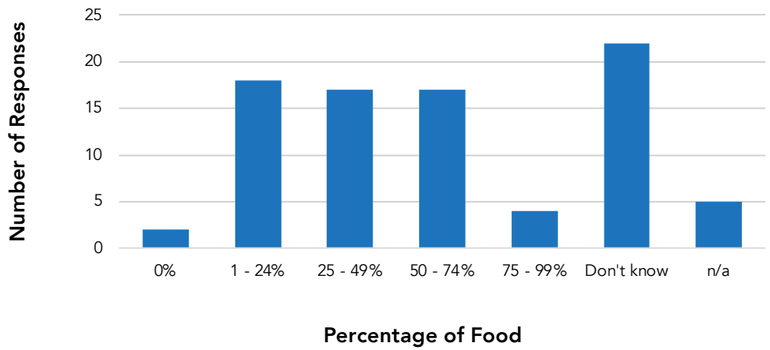
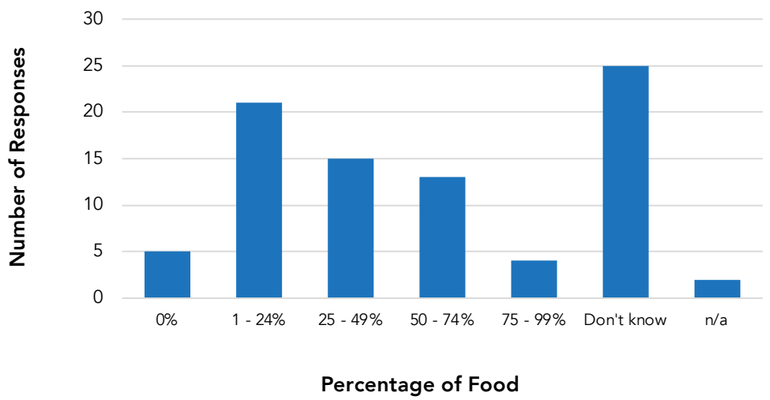


FIGURE 2

Resident responses to "What percentage of food that you consume is from organic or Fairtrade sources?"



LSF2, LSF3

FIGURE 3

Resident responses to "Did you participate in a CSA or farm-to-table program in 2024?"

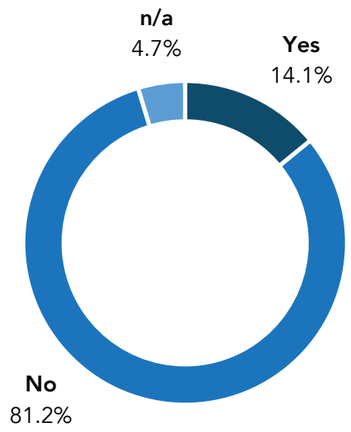


FIGURE 4

Resident responses to "What percentage of your weekly meals are plant-based?"

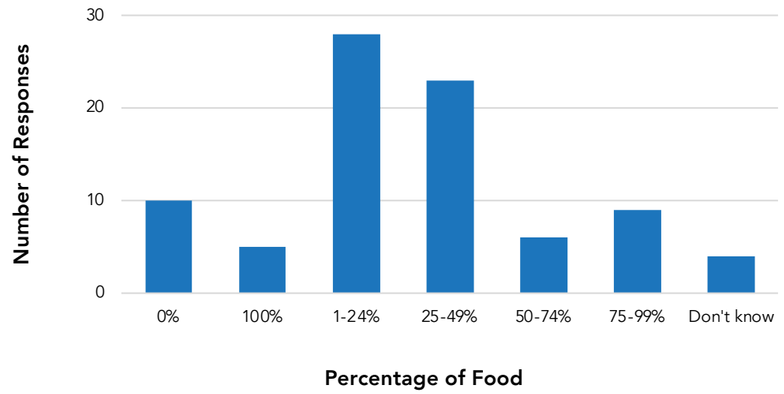
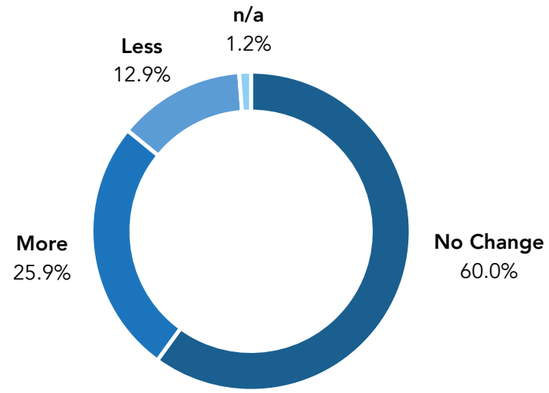


FIGURE 5

Resident responses to "Compared to last year, would you say you eat more or less plant-based meals now?"



APPENDIX F: TRAVEL & TRANSPORT

TT1

TABLE 1

Permanent parking spaces and EV charging capabilities (bolded residential).

SITE	# STALLS	# STALLS W/ CONDUIT	# CHARGERS	# RESIDENTIAL UNITS
Block 10&11	**181**	**157***	**24**	**310**
Block 13	**83**	**n/a**	**6**	**70**
Block 205A	**71**	**71**	**4**	**71**
Block 206	**78**	**10**	**4**	**207**
Block 207	59	8	4	0
Block 211	150	36*	4	0
Block 301	127	127	6	0
TOTAL	**749**	**409**	**52**	**658**
RESULTS		**55%**	**7%**	**0.6**

* Conduit has been placed in central ceiling locations to facilitate future expansion of EV chargers (i.e., not yet at each stall but can be).

FIGURE 1

Resident responses to **"How many kilometres do you travel per week for personal trips?"**

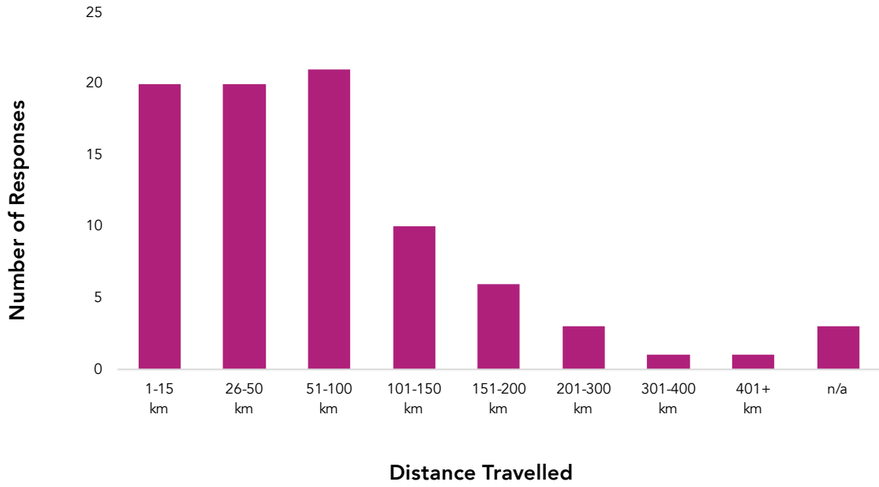


FIGURE 2

Choice of transportation by proposed distance.

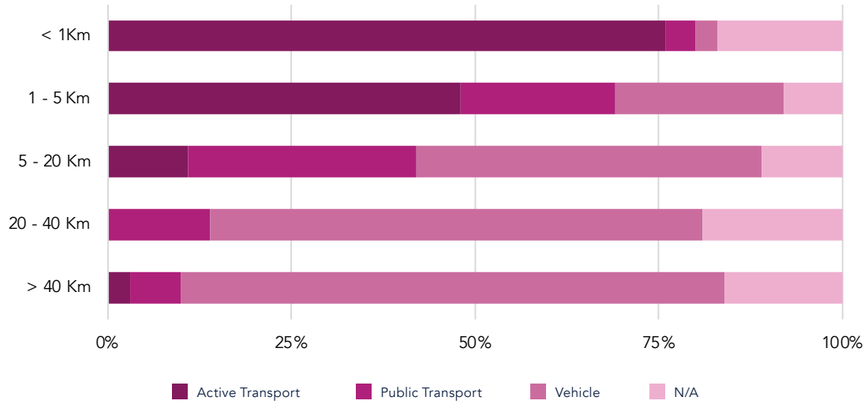


FIGURE 3

Resident responses to "What type of motorized vehicle do you have?"

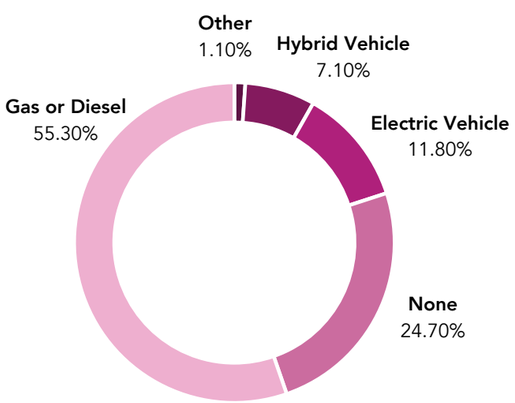
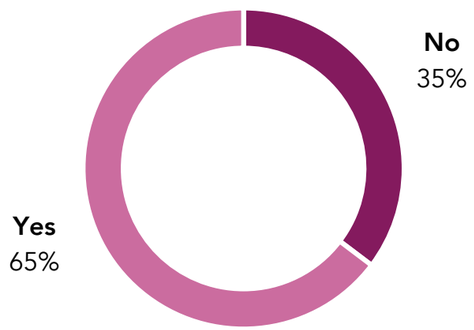


FIGURE 4

Resident responses to "Do you own or have access to a bicycle?"



APPENDIX G: PRODUCTS & MATERIALS

PM3

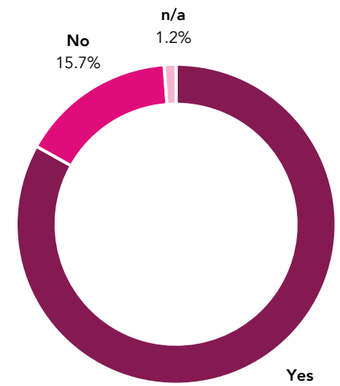
TABLE 1

Sustainability Consultant report summary for Block 206/7.

CATEGORY	TARGET/METRIC	RESULTS	COMMENTS
Recycled Content	20%	17%	Confident that this number is higher as several more materials have recycled content but unable to determine value at time of reporting.
Regional Content	20%	28%	Probable that this number is much higher
Certified Wood	80%	71%	Confident that this number is higher as several more wood products were certified but unable to determine value at time of reporting.
IAQ Testing	Temperature: 21-27 C	18.7 - 28 C	Corrected with thermostat adjustments.
	Relative Humitidy: 30-60%	16.6 - 58.3%	Some results influenced by on-going work during testing.
	Carbon Dioxide: 1000 ppm	427 - 645 ppm	
	Carbon Monoxide: <9 ppm	0 - 1.3 ppm	
	Particulate Matter: 50 ug/m^3	0 - 30 ug/m^3	
	Total Volatile Organic Compounds: 1000 ug/m^3	0 - 490 ug/m^3	
	Formaldehyde: 27 ppb	0 - 30 ppb	Some results influenced by on-going work during testing.

FIGURE 1

Resident responses to "In the last year, did you sell, trade, or donate any unwanted possessions?"



APPENDIX H: ZERO WASTE

ZW1

TABLE 1

Averages from monthly visual waste audits for Kanaal Condos, with estimated weight conversions.*

DATE	GARBAGE (YD^3)	GARBAGE (KG)	FIBER (YD^3)	FIBER (KG)**	CONTAINERS (YD^3)	CONTAINERS (KG)	ORGANICS (YD^3)	ORGANICS (KG)	TOTAL (KG)	DIVERSION RATE
January	4.00	196.00	4.00	216.00	2.00	92.00	0.39	70.14	574.14	65.86%
February	3.00	147.00	5.00	270.00	1.33	61.27	0.31	56.11	534.38	72.49%
March	2.66	130.54	5.00	270.00	1.50	69.00	0.47	84.17	553.70	76.42%
April	4.00	196.00	6.00	324.00	2.00	92.00	0.39	70.14	682.14	71.27%
June	4.00	196.00	8.00	432.00	2.00	92.00	0.16	28.06	748.06	73.80%
July	2.66	130.54	5.00	270.00	2.50	115.00	0.21	37.37	552.91	76.39%
August	4.00	196.00	7.00	378.00	2.67	122.64	0.23	42.08	738.72	73.47%
September	3.00	147.00	6.00	324.00	1.50	69.00	0.47	84.17	624.17	76.45%
November	4.00	196.00	8.00	432.00	2.00	92.00	0.31	56.11	776.11	74.75%
December	4.00	196.00	5.00	270.00	1.50	69.00	0.47	84.17	619.17	68.34%
AVERAGES	**3.53**	**173.11**	**5.90**	**318.60**	**1.90**	**87.39**	**0.34**	**61.25**	**640.35**	**72.92%**
ANNUAL TOTALS (ESTIMATED)	**183.71**	**9001.57**	**306.80**	**16567.20**	**98.79**	**4544.32**	**17.60**	**3184.98**	**33298.08**	

*Conversions provided by waste consultant: Paper = 150kg/m^3 (114kg/yd^3); Cardboard = 45kg/m^3 (34kg/yd^3); Containers = 60kg/m^3 (46kg/yd^3); Organics = 238kg/m^3 (181kg/yd3); Garbage = 65kg/m^3 (49kg/yd^3)
**Estimating that 75% of the fiber bin volume is cardboard and 25% is paper gives 54kg/yd^3 per the conversion rates

FIGURE 1

Resident responses to "Do you recycle?"

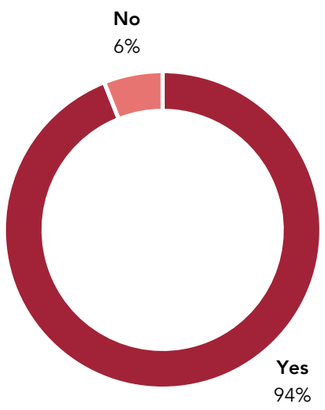


FIGURE 2

Resident responses to "Do you compost?"

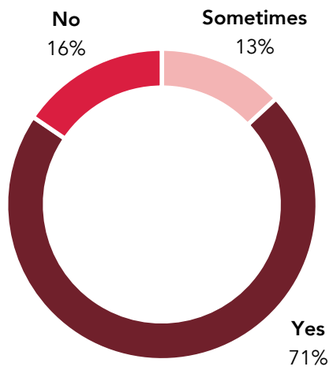


FIGURE 3

Commercial spaces waste generation and diversion.

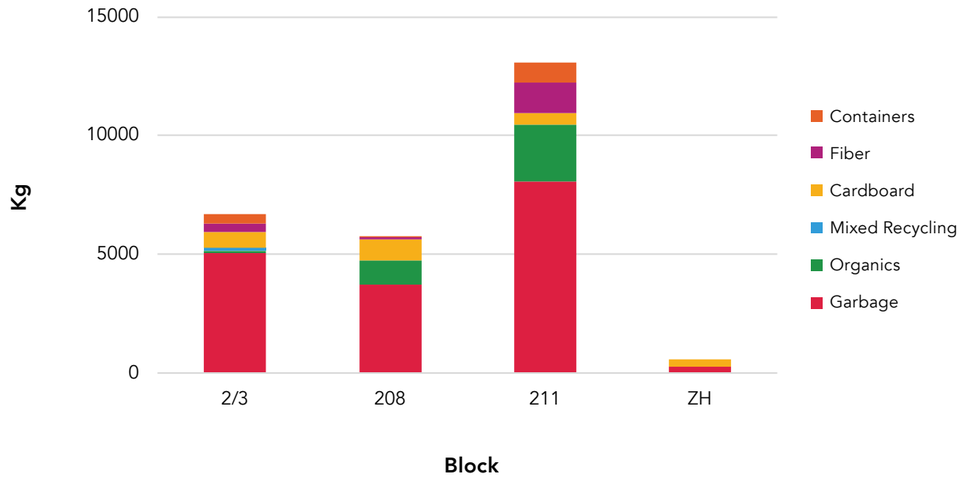
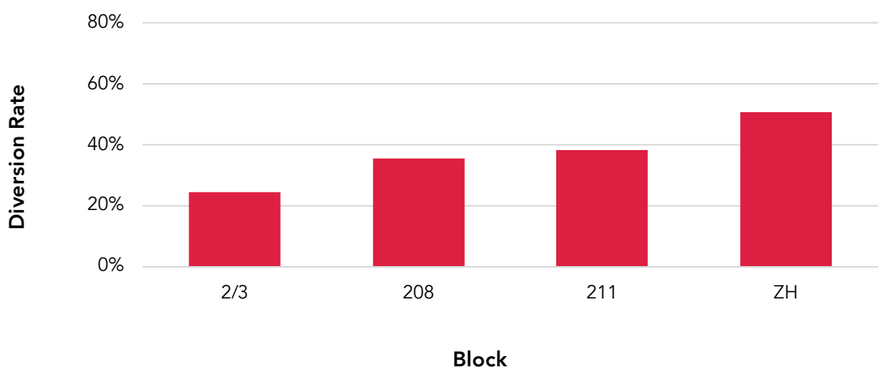


FIGURE 4

Commercial spaces diversion rates.



ZW4

TABLE 2

Ontario construction waste audit reports.

	MT DIVERTED BY MATERIAL									
DATE	FIBRE	DRYWALL	METAL	AGGRIGATE	WOOD	GLASS	TOTAL DIVERTED	RESIDUAL	TOTAL	DIVERSION RATE
January	6.59	2.28	2.51	0.3	5.97	5.02	22.67	22.97	45.64	49.67%
February	4.1	1.62	1.61	0.09	3.03	3.35	13.8	16.78	30.58	45.13%
March	5.15	6.73	1.13	2.75	7.17	3.11	26.04	12.69	38.73	67.23%
April	4.08	4.07	2.23	1.24	9.28	3.39	24.29	10.49	34.78	69.84%
May	3.6	5.21	0.87	0.25	4.63	2.17	16.73	9.2	25.93	64.52%
July	2.73	1.45	0.35		2.01	1.39	7.93	6.6	14.53	54.58%
August	2.05	3	0.49	0.09	1.86	1.38	8.87	5.5	14.37	61.73%
September	0.79	0.86	0.56	0.43	0.92	0.83	4.39	3.36	7.75	56.65%
October	1.14	1.6			2.44	0.79	5.97	2.58	8.55	69.82%
November	1.28	0.52	0.34	0.74	1.95	0.34	5.17	3.77	8.94	57.83%
TOTALS	**31.51**	**27.34**	**10.09**	**5.89**	**39.26**	**21.77**	**135.86**	**93.94**	**229.8**	**59.12%**

APPENDIX I: ZERO CARBON

ZC1

TABLE 1

Energy inputs and carbon accounting for district thermal energy system operations (totals from monthly invoices).

INPUT	SOURCE	CONSUMPTION	EMISSION FACTORS	EMISSIONS (KG CO2)
A	Hydro Quebec	2,527,200 kWh	1.5 g of CO2e/kWh	3,791
B	Gazifere (Natural Gas)	61,614 m^3	1926 g of CO2e/m^3	118,669
C	Hydro Ottawa	78,033 kWh	25 g of CO2e/kWh	1,951
D	Enbridge (Natural Gas)	7,886 m^3	1921 g of CO2e/m^3	15,149
TOTAL				**139,559**

TABLE 2

Energy demand per output by block, respective carbon accounting, and BAU comparisons.

	CONNECTED TO ZCU					BUSINESS AS USUAL COMPARISON		
BLOCK	HEATING (KWH)	COOLING (KWH)	DHW (KWH)	ENERGY MODEL IMPROVEMENT	LOCATION & TYPE	HEATING (KWH)	COOLING (KWH)	DHW (KWH)
Block 2-3	113,582	347,666		13%	QC-commercial	128,348	392,862	0
Block 10	272,656	526,310	437306	24%	QC-residential	338,093	652,624	542,259
Block 11	192,430	293,937		21%	QC-residential	233,610	356,840	0
Block 13	223,149	262,668	0	35%	QC-residential	301,251	354,601	0
Zibi House	11,181	30,037	0	0%	QC-commercial	11,181	30,037	0
Block 205	459,410	291,948	216955	11%	ON-residential	509,945	324,062	240,820
Block 206	1,145,243	586,587	190391	19%	ON-residential	1,362,839	698,039	226,565
Block 207	531,027	229,950.9		26%	ON-office	669,094	289,738	0
Block 208	143,711	88,684		13%	ON-office	162,393	100,213	0
Block 211	894,330	851,033	46619	18%	ON-office	1,055,309	1,004,219	55,010
Block 301	35,392			0%	ON-parking	35,392	0	0
TOTAL	**4,022,112**	**3,508,820**	**891,271**			**4,807,457**	**4,203,235**	**1,064,655**
RATIO OF DEMAND FORMULA*	(23% of B) + (heating ratio * A) + (heating ratio * 90% of C)	(cooling ratio * A) + (cooling ratio * 90% of C)	(77% of B) + D + (10% of C)					
NET CARBON PRODUCTION (KGCO2E)	106,204	2,584	30,771			922,439	18,331	228,662
INTENSITY (G CO2/KWH)	23.45	0.74	34.52			191.88	4.36	214.78
TOTAL EMISSIONS (KG CO2E)		**139,559**					**1,169,432**	
CARBON SAVINGS		**88%**						

*Cooling ratio (0.466) is the portion of energy draw to produce cooling energy; heating ratio (0.534) is the portion of energy draw to produce heating energy

ZC1

TABLE 3

Building energy demand statistics.

BLOCK	FLOOR AREA (m^2)*	NUMBER OF RESIDENTIAL UNITS	REFERENCE ANNUAL ENERGY DEMAND (KWH)	MODELED ANNUAL ENERGY DEMAND (KWH)	REFERENCE ANNUAL ENERGY DEMAND (KWH/m^2)	MODELED ANNUAL ENERGY DEMAND (KWH/m^2)	ENERGY DEMAND REDUCTION (REFERENCE VS. MODELED)	ACTUAL ANNUAL ENERGY DEMAND (KWH/m^2)	ACTUAL REDUCTION (REFERENCE VS. REAL)	NOTES
2/3†	5,253	n/a	1,085,415	945,540	207	180	-13%	189	-8%	
10	13,956	162	2,514,167	1,920,556	180	138	-24%	154	-14%	
11	12,389	148	3,013,056	2,368,889	243	191	-21%	133	-45%	Partial occupancy throughout 2024, for example, 50% in May, 70% in September; 76% in December.
13	7,002	70	1,365,390	887,153	195	127	-35%	186	-5%	
205A	7,945	71	1,805,000	1,601,667	227	202	-11%	182	-20%	
206	21,367	250◊	7,078,889	5,716,944	331	268	-19%	n/a	n/a	Low occupancy; 2025 will be the first full reporting year.
207	7,388	n/a	1,790,833	1,330,278	242	180	-26%	n/a	n/a	Unoccupied.
208	3,192	n/a	588,889	515,000	184	161	-13%	143	-23%	
211	19,682	n/a	2,855,278	2,355,278	145	120	-18%	158	9%	Fully leased by June 2024 but minimal workers on site daily.

* Gross floor area above grade
† Energy model unavailable; similar building as Block 208 but smaller and atrium adds inefficiency so add 12% to reference building intensity; assume 13% better as per 208
◊ Block 206 has 207 units but 43 of them have more than double the assumed occupancy (co-living units with 3-5 bedrooms/leases); rounding up to account for presumable increase in energy use

ZC2

TABLE 4

Building thermal load energy demand.

BLOCK	PROPORTION OF LOAD BY ZCU (MODELED)	PROPOSED BUILDING EXPECTED KWH	ACTUAL KWH	DELTA (-VE GOOD)	% (-VE GOOD)	NOTES
2/3	57%	699,116	461,247	-237,869	-34%	Perimetre electric heat is coming on before the AHU (air handleing unit) which is tied to district energy; perimeter heat has a COP of 1, AHU has a COP of 3.5.
10	67%	1,286,773	1,236,272	-50,501	-4%	
11	51%	1,208,133	486,367	-721,766	-60%	Partial occupancy
13	40%	354,861	485,817	130,956	37%	Difference largely due to inefficient operations of public space heating and DHW as building is using electric coil at all times instead of using AHU when temps allow.
205A	80%	1,281,334	968,313	-313,021	-24%	
206	81%	4,630,725	n/a	n/a	n/a	Low occupancy
207	47%	625,231	n/a	n/a	n/a	Unoccupied
208	57%	293,550	232,395	-61,155	-21%	
211	61%	1,436,720	1,791,982	355,262	25%	

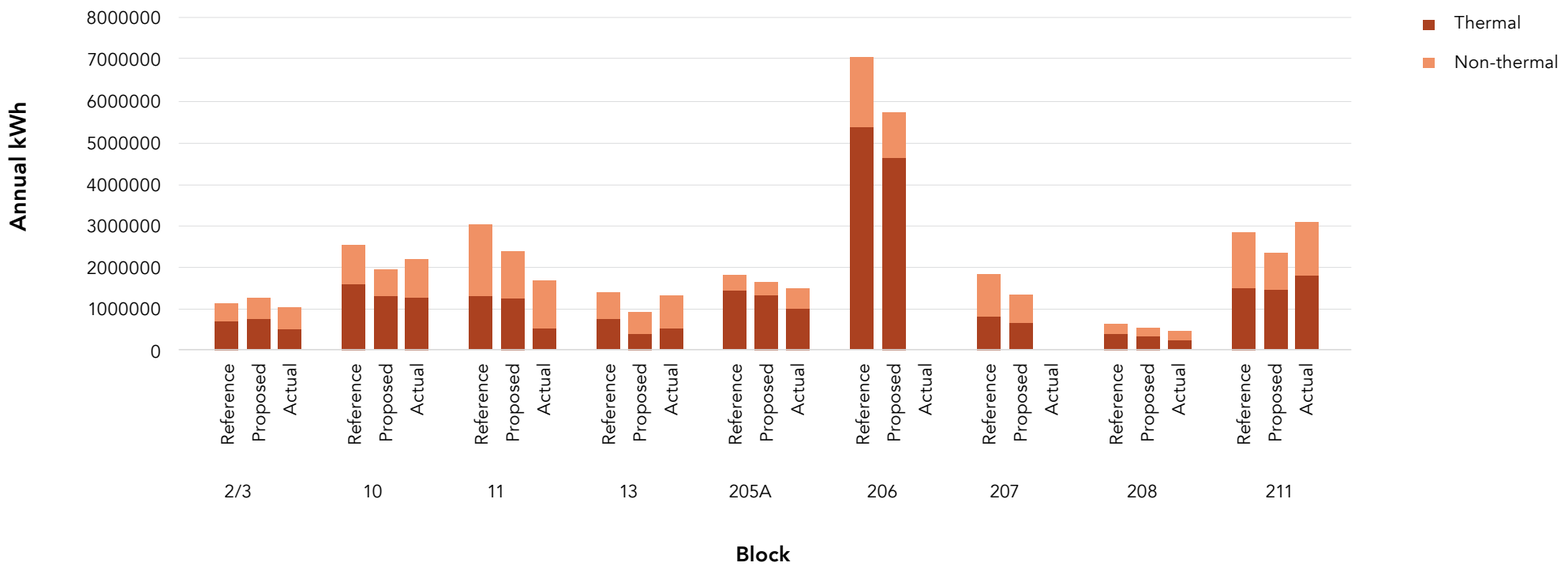
TABLE 5

Building non-thermal load energy demand.

BLOCK	PROPORTION OF LOAD BY ZCU (MODELED)	PROPOSED BUILDING EXPECTED KWH	ACTUAL KWH	AVERAGE KWH PER UNIT	DELTA (-VE GOOD)	% (-VE GOOD)	NOTES
2/3	43%	527,403	533,700	n/a	6,297	1%	
10	33%	633,783	915,579	3,433	281,796	44%	Possible that model has underestimated plug loads.
11	49%	1,160,756	1,164,795	2,774	4,039	0%	Domestic hot water production is electrical, reviewing trends for 2025
13	60%	532,292	814,564	3,689	282,272	53%	Largely due to inefficient operations of public space heating and DHW, as they are using electric loads for this.
205A	20%	320,333	480,983	3,270	160,650	50%	Possible that model has underestimated plug loads.
206	19%	1,086,219	n/a	n/a	n/a	n/a	Low occupancy
207	53%	705,047	n/a	n/a	n/a	n/a	No occupancy
208	43%	221,450	222,952	n/a	1,502	1%	
211	39%	918,558	1,319,183	n/a	400,625	44%	

FIGURE 1

Energy demand profile by building.



2024 ONE PLANET LIVING APPENDIX