



2023 ONE PLANET APPENDIX



APPENDIX A: HEALTH AND HAPPINESS

HH1, HH2 and HH4

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

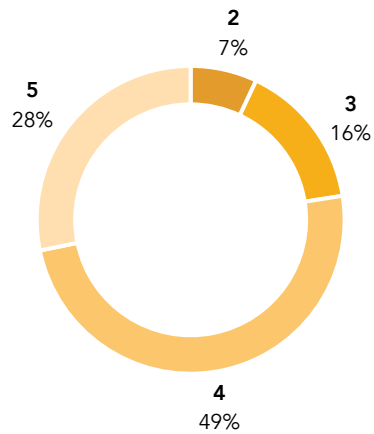


Figure 2: Resident responses to "Do you feel involved in the Zibi community?"

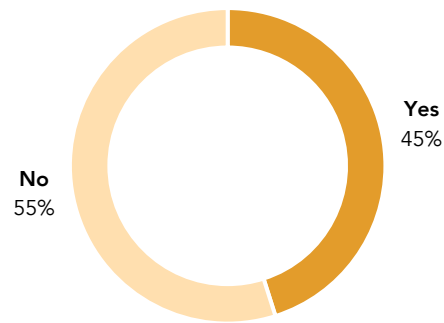
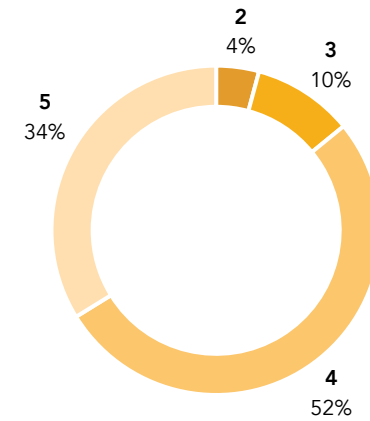


Figure 3: Resident responses to "How would you rate your overall satisfaction with your health?" (Scale of 1 to 5)



HH5

Figure 4: Staff responses to "How would you rate your overall satisfaction with your health?" (Scale of 1 to 5)

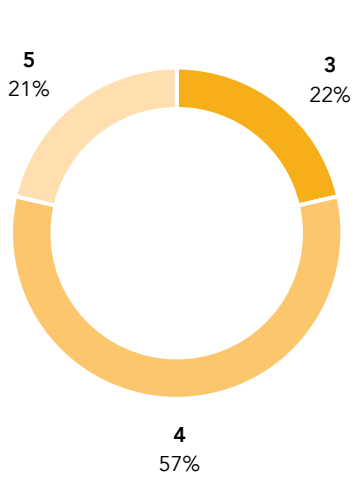


Figure 5: Trade workers responses to "How would you describe your overall health (mental and physical combined)?" (Scale of 1 to 5)

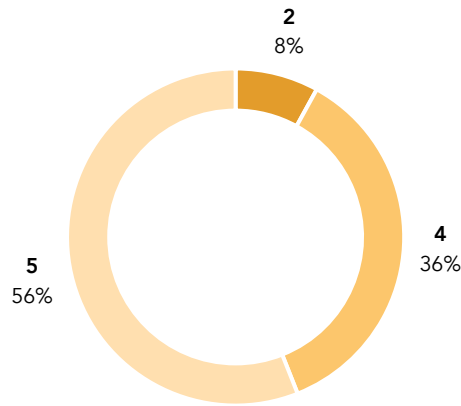


Figure 6: Staff responses to "How does your experience at Zibi compare to other places of employment?" (Options: Better, Similar, Worse)

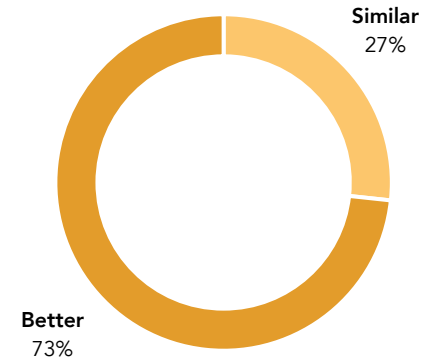
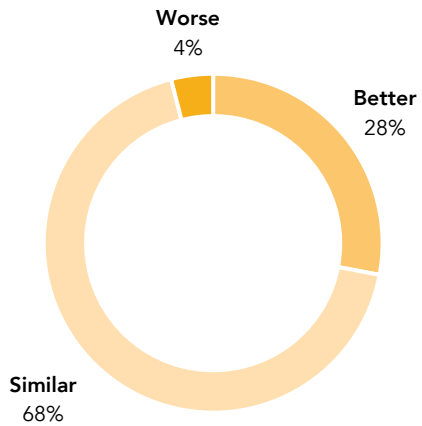


Figure 7: Trade worker responses to "How does your experience at Zibi compare to other sites?"



APPENDIX B: EQUITY AND 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
TOTAL	451	203	45%

ELE5

Table 2: Events held at Zibi in 2023.

Date	Event	Event type	Number of attendees
February 7	FCM Sustainable Communities Conference	Site tour	35
March 1-4	Rendez-vous des nations	Festival	600
March 9-11	Festibière d'hiver	Festival	4,800
April 22	Balcony Gardening Workshop	Workshop, Community Event	16
May 4	Techno-elles	Event	60
May 5	Canadian Bar Association Tour	Site tour	60
May 13	Repair Cafe	Event	75
June 8	Kanaal Resident Social	Community Event	35
June 11	Body and Balance Yoga	Event	40
June 13	Lets Bike Workshop	Workshop	30
June 24	Fred Astaire Dance Party	Event	45
June 23-26	Ribfest	Festival	5,000
June 25	Community Yard Sale	Event	30
July 19-29	Festibière d'été	Festival	1,600
July 26	Alvéole: Meet your bees	Workshop, Community Event	13
July 30	Brewery Bike Tour	Community Event	13
September 6	University of Ottawa	Site tour	24
September 9	Repair Cafe	Event	60
October 3	Harvest Fest	Community Event	45
November 14	Alvéole: Wonders of Beeswax	Workshop, Community Event	5
November & December	Body and Balance Yoga	Event	30
November & December	Les soirées illuminées (Harry Potter)	Event	900
December 2-3	Urban Art Collective Christmas Market	Market	1,000
December 7	Holiday Shoebox Social	Community Event	20
December 22	Holiday Mixer	Community (Blk 10)	30
TOTAL	25		14,536

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	Canadian based in Ottawa
Model suite, Kanaal	Artwork	Brendan A. de Montigny	Gatineau, Quebec
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 (Cree Nation)
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, Aalto II	Unknown	Wayne Mckenzie	Timiskaming First Nation
Lounge, Aalto II	Unknown	Suny Jacobs	Indo Canadian
Lobby, Aalto II	Custom	Annie Pillaktuaq	Iqaluit, Nunavut
Lobby, Aalto II	Culture of Wealth	Annie Pillaktuaq	Iqaluit, Nunavut

CC6 and CC7

Figure 1: Resident responses to "How many neighbours do you know?"

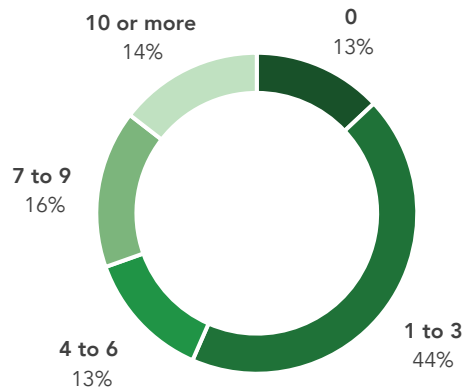


Figure 2: Resident responses to "Would you say that your environmental and sustainability awareness has increased in the last year?"



CC7

Figure 3: Staff responses to "Would you say that your environmental and sustainability awareness has changed since working at Zibi?"



Figure 4: Trade worker responses to "Did you know that Zibi will be the most sustainable development in Canada?"

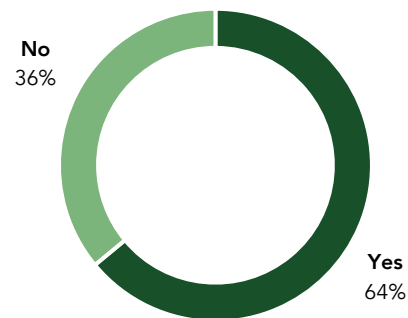
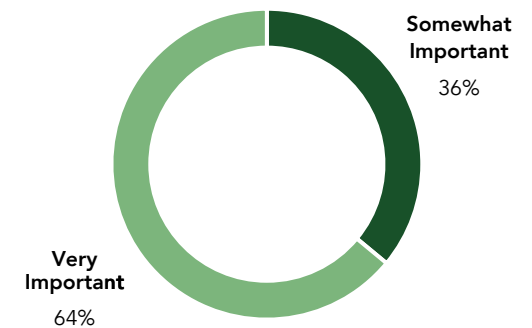


Figure 5: Trade worker responses to "How important is sustainability to you?" (Options: Very important, Somewhat important, Not important, I'm not sure what it means)



APPENDIX D: LAND AND NATURE

LN2

Table 1: Site area dedicated to park space.

Space	Size (sq m)	% 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%	4.4%
Wasa Zibi Plaza	1963	10%	1.43%

LN2

Table 2: Plant list for public spaces to date (Pangishimo Park (P), Head Street Square (H), Wasa Plaza (W), Streetscapes(S), Terasini Park (T)).

Scientific name	Common name	Culturally or historically significant	Reintroduced (not found in baseline)	Quantity*	Site
<i>Abies balsamea</i>	Balsam fir	✓	✓	7	W
<i>Acer rubrum</i>	Red maple	✓		7	W,S
<i>Acer saccharinum</i>	Silver maple	✓	✓	32	P, T
<i>Acer saccharum</i>	Sugar maple	✓	✓	13	P,W,S
<i>Aesculus glabra</i>	Ohio buckeye	✓	✓	2	T
<i>Agastache foeniculum</i>	Anise hyssop	✓	✓	49	P,H
<i>Amelanchier canadensis</i>	Serviceberry	✓	✓	19	H,W,S
<i>Amelanchier laevis</i>	Allegheny serviceberry		✓	10	T
<i>Aronia melanocarpa</i>	Black chokeberry		✓	12	P,H
<i>Artemisia ludoviciana</i>	White sagebrush	✓	✓	66	P
<i>Athyrium filix-femina</i>	Lady fern		✓	13	H
<i>Betula alleghaniensis</i>	Yellow Birch	✓	✓	16	T
<i>Betula papyrifera</i>	Paper birch	✓	✓	15	P
<i>Bouteloua curtipendula</i>	Sideoats grama		✓	12	P
<i>Calamagrostis canadensis</i>	Canada bluejoint		✓	244	P,H,W,S
<i>Carex muskingumensis</i>	Palm sedge		✓	150	P,H
<i>Carex pensylvanica</i>	Oak sedge		✓	55	H,W
<i>Carex vulpinoidea</i>	Fox sedge		✓	97	P
<i>Carya ovata</i>	Shagbark hickory	✓	✓	5	T
<i>Celtis occidentalis</i>	Common hackberry	✓	✓	20	H,W,S
<i>Comptonia peregrina</i>	Sweet fern	✓	✓	18	P
<i>Cornus racemosa</i>	Gray dogwood		✓	50	T
<i>Cornus sericea</i>	Red osier dogwood	✓		31	P,H
<i>Corylus americana</i>	American hazel		✓	10	T
<i>Deschampsia cespitosa</i>	Tufted hairgrass		✓	756	P,H,W,S,T
<i>Diervilla lonicera</i>	Northern bush honeysuckle			211	P,H,W,T
<i>Eupatorium maculatum</i>	Spotted joe-pye weed	✓	✓	5	P
<i>Fagus grandifolia</i>	American beech	✓	✓	17	W,T

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Scientific name	Common name	Culturally or historically significant	Reintroduced (not found in baseline)	Quantity*	Site
<i>Geranium maculatum</i>	Wild geranium	✓	✓	129	P,H
<i>Gillenia trifoliata</i>	Bowman's root		✓	15	P
<i>Heliopsis helianthoides</i>	False sunflower	✓	✓	30	P,W
<i>Hierochloe odorata</i>	Sweet grass		✓	139	P
<i>Iris versicolor</i>	Blue flag iris		✓	160	T
<i>Juniperus virginiana</i>	Esatern red cedar			10	T
<i>Myrica pensylvanica</i>	Northern bayberry		✓	27	P,T
<i>Osmunda cinnamonea</i>	Cinnamon fern	✓	✓	36	H,S
<i>Ostrya virginiana</i>	Ironwood	✓	✓	3	S
<i>Parthenocissus quinquefolia</i>	Virginia creeper (vine)			42	S
<i>Penstemon hirsutus</i>	Hairy beardtongue		✓	173	H,S
<i>Picea glauca</i>	White spruce	✓		18	P,T
<i>Pinus strobus</i>	Eastern white pine	✓		35	P,W,T
<i>Populus deltoides</i>	Eastern cottonwood			5	T
<i>Populus grandidentata</i>	Bigtooth aspen	✓	✓	23	W
<i>Populus tremuloides</i>	Trembling (quaking) aspen	✓		48	P,W,T
<i>Quercus macrocarpa</i>	Burr oak	✓		3	W
<i>Quercus palustris</i>	Pin oak		✓	5	P
<i>Rhus aromatica</i>	FrAGRANT sumac			24	H
<i>Rhus typhina</i>	Staghorn sumac	✓		5	S
<i>Ribes aureum</i>	Golden currant		✓	2	P
<i>Rudbeckia lacinata</i>	Cutleaf coneflower		✓	25	P
<i>Salix discolor</i>	Pussy willow	✓		32	T
<i>Salix lucida</i>	Shining willow	✓	✓	7	S
<i>Salix nigra</i>	Black willow	✓	✓	16	T
<i>Sambucus canadensis</i>	American elderberry	✓	✓	12	S,T
<i>Schizachyrium scoparium</i>	Little bluestem		✓	342	P,H,W
<i>Sorghastrum nutans</i>	Indian grass	✓	✓	96	H,S
<i>Spiraea alba</i>	White meadowsweet	✓	✓	4	H
<i>Sporobolus heterolepsis</i>	Prairie dropseed		✓	452	P,H,W,S
<i>Symphoricarpos albus</i>	Common snowberry		✓	3	P

▼ Chart continued on next page

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/witherod	✓		14	S,T
Viburnum lentago	Nannyberry viburnum		✓	10	T
TOTAL	64	34	49	3914	

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

LN4

Figure 1: Resident responses to "Has your time in nature increased since living in Zibi?"



APPENDIX E: SUSTAINABLE WATER

SW1

Table 1: Residential water meter readings and estimated resident daily potable water consumption.

Block 10 - Aalto Suites	Results	Note
Building Consumption	10,482.7 m ³	343 days (Feb 2, '23 to Jan 11, '24)
# of residents	155	
Potable water consumed per resident, per day (estimated)	0.197 m ³	197 L
Block 13 - O Condos	Results	Note
Building Consumption	4,441.5 m ³	278 days (Jan 10, '23 to Aug 10, '23 plus Nov 6, '23 to Jan 11, '24)
# of residents	103	
Potable water consumed per resident, per day (estimated)	0.155 m ³	155 L
Block 205A - Kanaal	Results	Note
Building Consumption	5,087.3 m ³	366 days (Jan 10, '23 to Jan 11, '24)
# of residents	98	
Potable water consumed per resident, per day (estimated)	0.142 m ³	142 L
AVERAGE	165 L / person / day	

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
208	20	0
210	8	0
211	80	0
% OF SEWAGE CONVEYANCE THROUGH NON-POTABLE WATER	780	6%

SW4

Table 3: Zibi stormwater Total Suspended Solids (TSS) results compared to relevant guidelines and standards.

Sample Location	Date	TSS mg/L
East Chaudière (ON)	15-Feb	320
	30-Aug	15
Interzip (ON)	15-Feb	530
	30-Aug	192
Block 13 Outfall (QC)	15-Feb	170
	30-Aug	32
Block 10 Outfall (QC)	30-Aug	46

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

APPENDIX F: LOCAL AND 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	11%
11 - Aalto II	25.75	148	12%
13 - O Condos	17.92	70	18%
205A - Kanaal	0	71	0%
TOTAL	69.31	451	11%
RATIO			1:9:1

LSF2

Figure 1: Resident responses to "What percentage of food that you consume is from local sources?"

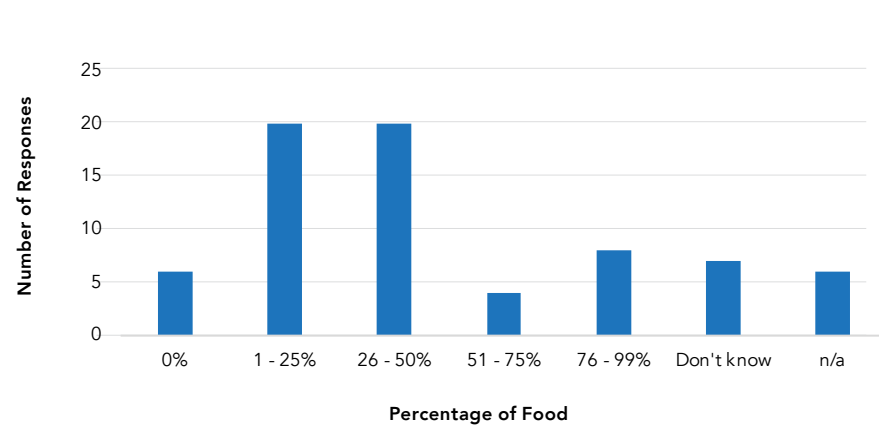
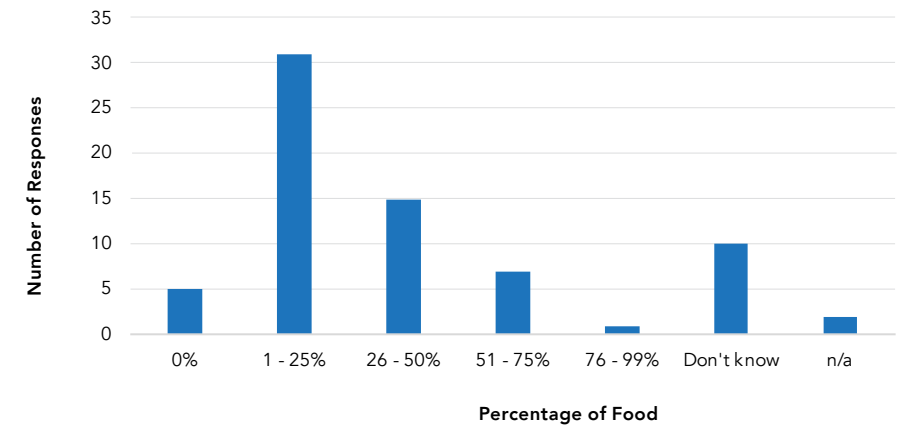


Figure 2: Resident responses to "What percentage of food that you consume is from organic or Fair-Trade sources?"



LSF3

Figure 3: Resident responses to "How many plant-based meals do you consume per week?"

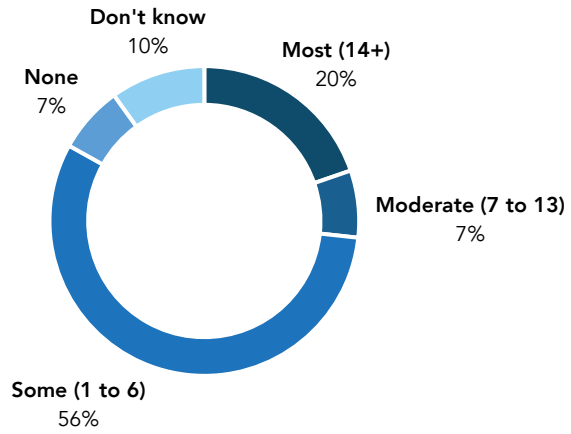
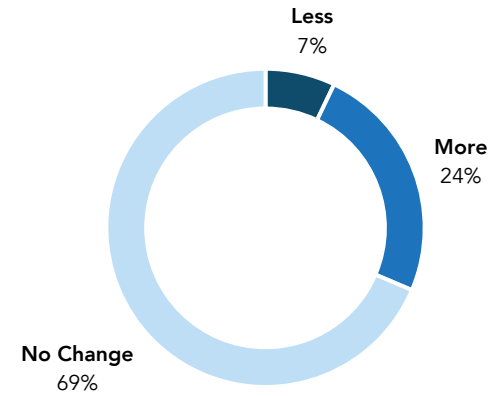


Figure 4: Resident responses to "Compared to last year, would you say you eat more or less plant-based meals now?"



APPENDIX G: TRAVEL AND TRANSPORT

TT1

Table 1: Permanent parking lots and EV charging capabilities (residential bolded).

Site	Sq. ft.	# Stalls	# Stalls w/ Conduit	# Chargers	# Residential Units
Block 10 & 11	78,000	181	157*	24	310
Block 13	52,018	83	n/a	6	70
Block 205A	35,703	71	71	4	71
Block 211	83,700	150	36*	4	0
Block 301	41,400	127	127	6	0
RESULTS	290,821.00	612	391	44	451

*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 "What would be your typical mode of transportation for the following distances?"

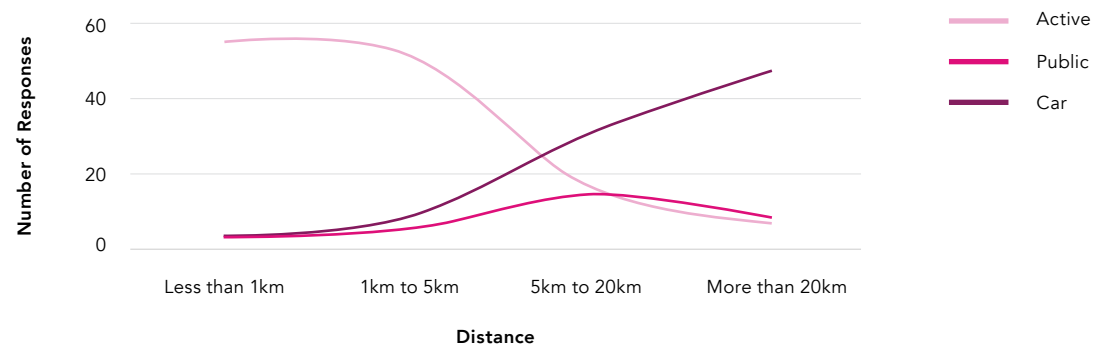


Figure 2: Resident responses to "On average, how many kilometres do you travel per week for personal trips?"

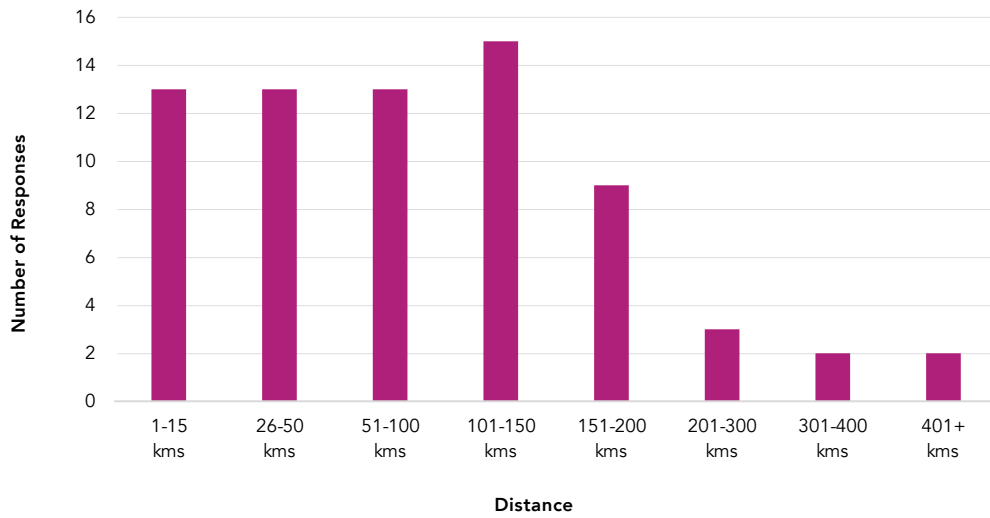
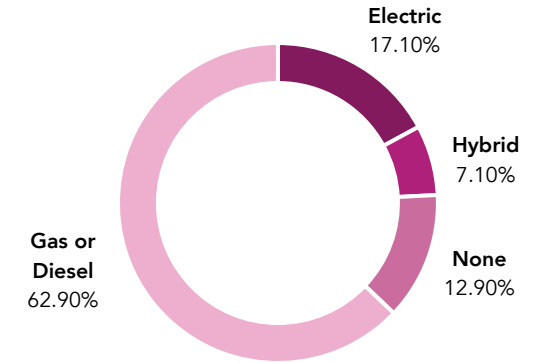


Figure 3: Resident responses to "What type of motorized vehicle do you use?"



APPENDIX H: MATERIALS AND PRODUCTS

PM3

Table 1: Sustainability consultant report summary for Block 11.

Category	Target/Metric	Results
Recycled Content	20%	25.70%
Regional Content	20%	36.13%
Certified Wood	80%	75%
IAQ Testing	Temperature: 21-27 C	19.2 -23.2 C
	Relative Humidity: 30-60%	20.4-36.4%
	Carbon Dioxide: 1000 ppm	475-785.7 ppm
	Carbon Monoxide: <9 ppm	0-0.2 ppm
	Particulate Matter: 50 ug/m ³	0-12 ug/m ³
	Total Volatile Organic Compounds: 1000 ug/m ³	80-740 ug/m ³
	Formaldehyde: 27 ppb	0-6.7 ppb
Low Emitting Materials - VOC products	Sealants	Yes
	Paints	Yes
	Adhesives	Yes
	Coatings	Yes
	No added urea formaldehyde	Yes
	Finished flooring	Yes
	Insulation materials	Yes

APPENDIX I: 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	3.5	171.5	2.64	142.56	1.32	60.72	0.155	28.055	402.835	57.43%
February	4	196	2	108	1.32	60.72	0.2046	37.0326	401.7526	51.21%
March	4	196	2.64	142.56	1.32	60.72	0.2046	37.0326	436.3126	55.08%
May	5	245	4	216	2	92	0.155	28.055	581.055	57.84%
June	4	196	2.64	142.56	1	46	0.2046	37.0326	421.5926	53.51%
July	2	98	3	162	1.5	69	0	0	329	70.21%
August	4	196	2.64	142.56	1.32	60.72	0	0	399.28	50.91%
September	5	245	3	162	2	92	0.465	84.165	583.165	57.99%
October	5	245	2.64	142.56	1.5	69	0.31	56.11	512.67	52.21%
December	4	196	2	108	1.32	60.72	0.2046	37.0326	401.7526	51.21%
AVERAGES	4.05	198.45	2.72	146.88	1.46	67.16	0.19	34.45	446.94	55.76%
ANNUAL TOTALS (ESTIMATED)	210.6	10319.4	141.44	7637.76	75.92	3492.32	9.90	1791.48	23240.96	

*Conversions provided by waste consultant: Paper = 150kg/m³ (114kg/yd³); Cardboard = 45kg/m³ (34kg/yd³); Containers = 60kg/m³ (46kg/yd³); Organics = 238kg/m³ (181kg/yd³); Garbage = 65kg/m³ (49kg/yd³)

**Estimating that 75% of the fiber bin volume is cardboard and 25% is paper gives 54kg/yd³ per the conversion rates

Figure 1: Resident responses to "Do you recycle?"

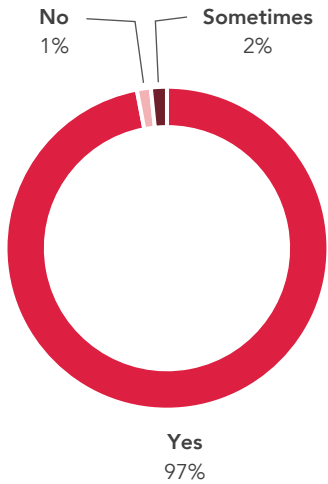


Figure 2: Resident responses to "Do you compost?"

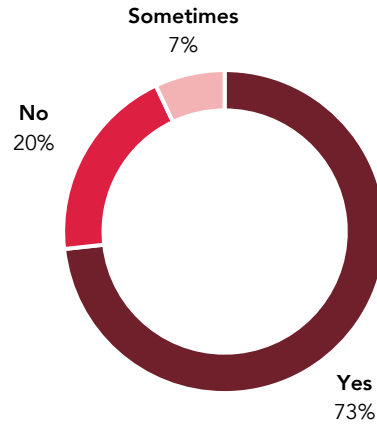


Figure 3: Resident responses to "Are you confident about your knowledge on waste sorting?"

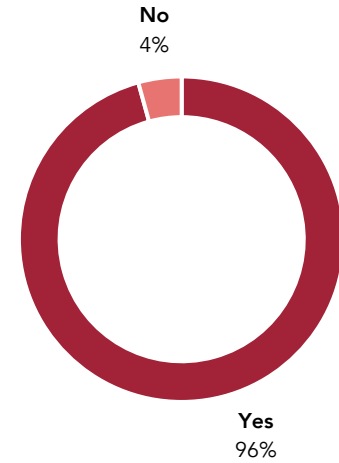


Figure 4: Commercial Space Waste Generation and Diversion

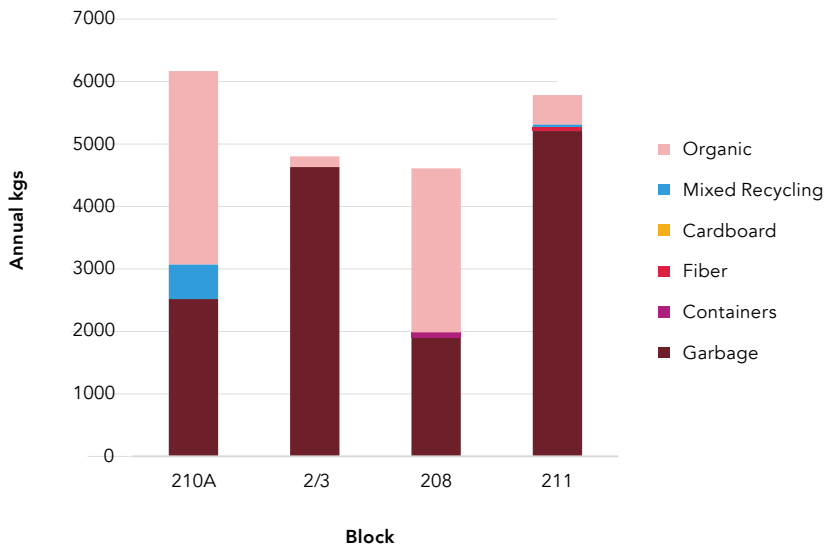
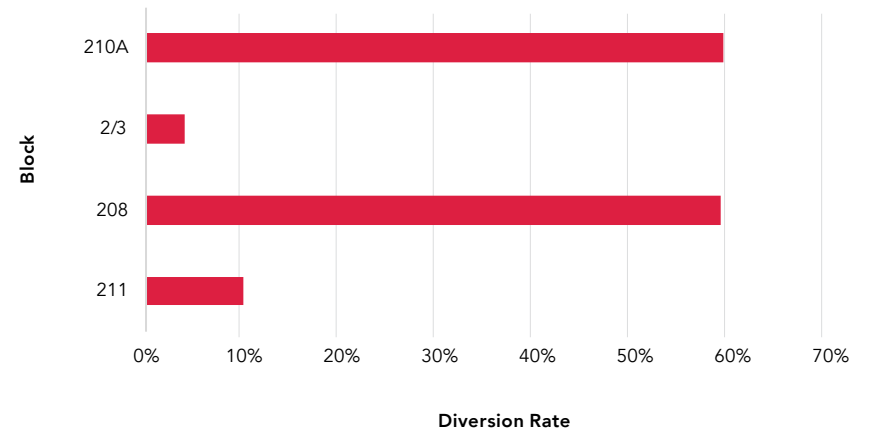


Figure 5: Commercial Space Diversion Rates



ZW4

Table 2: Quebec construction waste audit reports.

Date	MT Diverted by Material							Total Diverted	Residual	Total	Diversion Rate
	Wood	Metal	Cardboard	Drywall	Insulation	Aggregate	Plastic				
January	2.076		2.076	2.076	2.076		2.076	10.38		10.38	100.00%
February	3.3935		3.215	3.215	2.3185		2.138	14.28		14.28	100.00%
March	7.2255		5.322	9.0665	6.2475		5.7585	33.62		33.62	100.00%
April	10.6465		5.1825	9.5315	4.6585		3.171	33.19		33.19	100.00%
May	12.3725		12.3725	12.3725	11.5808		11.5808	60.2791		60.2791	100.00%
June	15.457		10.34	14.736	9.678		9.059	59.27		59.27	100.00%
July	4.864		2.62	5.015	2.935	17.01	2.456	34.9		34.9	100.00%
August	1.288		0.868	1.288	1.078		0.868	5.39		5.39	100.00%
September	2.411		2.6	4.07	1.494		3.335	13.91		13.91	100.00%
October	1.9645		1.489	1.9645	1.806		1.806	9.03		9.03	100.00%
November	3.21	0.22	2.984	2.816	1.926		2.744	13.9		13.9	100.00%
TOTALS	64.9085	0.22	49.069	66.151	45.7983	17.01	44.9923	288.1491	0	288.1491	100.00%

ZW4

Table 3: Ontario construction waste audit reports.

Date	MT Diverted by Material							Total Diverted	Residual	Total	Diversion Rate
	Fibre	Cleanfill	Drywall	Metal	Aggregate	Wood	Glass				
January	7.86		3.65	1.98	16.41	17.09		46.99	15.03	62.02	75.77%
February - March	21.11		13.03	6.49	8.43	43.24		92.3	34.94	127.24	72.54%
April - May - June	41.2	0.3	30.81	6.83	9.74	61.75		150.63	47.08	197.71	76.19%
July	14.02		11.39	2.14	2.43	13.87		43.85	14.81	58.66	74.75%
August	18.15		10.6	1.41	1.33	9.87		41.36	17.69	59.05	70.04%
September	16.5		9.79	1.28	0.55	10.77		38.89	18.16	57.05	68.17%
October	31.23		14.77	1.46	1.85	10.39		49.49	17.82	67.31	73.53%
November	10.64	0.1	9.64	2.2	0.96	10.16	7.56	41.26	20.31	61.57	67.01%
December	6.67		7.42	2.49	1.39	7.47	5.41	30.85	14.72	45.57	67.70%
TOTALS	167.38	0.4	111.1	26.28	43.09	184.61	12.97	535.62	200.56	736.18	72.76%

APPENDIX J: ZERO CARBON ENERGY

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 CO ₂)
A	Hydro Quebec	1,672,800 kWh	1.5 g of CO ₂ e/kWh	2,509
B	Gazifere (Natural Gas)	69,834 m ³	1926 g of CO ₂ e/m ³	134,500
C	Hydro Ottawa	343,240.17 kWh	25 g of CO ₂ e/kWh	8,581
D	Enbridge (Natural Gas)	22,213 m ³	1921 g of CO ₂ e/m ³	42,671
TOTAL				188,261

ZC1

Table 2: Energy demand per output by block, respective carbon accounting, and BAU comparisons.

Block	Connected to ZCU				Location	Business as usual comparison		
	Heating (kWh)	Cooling (kWh)	DHW (kWh)	Proposed Improvement (Energy Model)		Heating (kWh)	Cooling (kWh)	DHW (kWh)
Block 2-3	107920	408594	0	13%	QC	121,950	461,711	0
Block 10	295706	536890	484550	24%	QC	366,675	665,744	600842
Block 11	69409	24473	0	21%	QC	84,263	29,710	0
Block 13**	236481	228398	0	35%	QC	319,249	308,337	0
Zibi House	16086	24160	0	0%	QC	16,086	24,160	0
Block 205	521744	292185	212497	11%	ON	579,136	324,325	235871.67
Block 206	24589	555	0	20%	ON	29,507	666	0
Block 207	1973	409	0	18%	ON	2,328	483	0
Block 208	193606	77637	0	13%	ON	218,775	87,730	0
Block 211	1517380	1290362	43480.43	18%	ON	1,790,508	1,522,627	51306.9074
Block 301	16762	0	0	0%	ON	16,762	0	0
TOTAL	3,001,656	2,883,663	740,527			3,545,239	3,425,493	888,021
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)	36,154	5,013	147,094			663,109	14,721	190,725
Intensity (g CO2/kWh)	12.04	1.74	198.63			187.00	4.31	214.78
TOTAL EMISSIONS (kg CO2e)		188,261					868,555	
CARBON SAVINGS		78%						

*Cooling ratio (0.49) is the portion of energy draw to produce cooling energy; heating ratio (0.510) is the portion of energy draw to produce heating energy

**A portion of DHW energy is carried by heating load

ZC2

Table 3: Building energy demand statistics.

Block	Floor area (m ²)*	Reference annual energy consumption (kWh/m ²)	Proposed annual energy consumption (kWh)	Reference annual energy consumption (kWh/m ²)	Proposed annual energy consumption (kWh/m ²)	Savings (reference vs. proposed)	Real annual energy consumption (kWh/m ²)	Actual savings (reference vs. real)
2/3**	5,253	1,085,415	944,311	207	180	13%	204	1%
10	13,956	2,514,167	1,920,556	180	138	24%	161	10%
11	12,389	3,013,056	2,368,889	243	191	21%	n/a	n/a
13	7,002	1,365,390	887,153	195	127	35%	205	-5%
205A	7,945	1,805,000	1,601,667	227	202	11%	189	17%
208	3,192	588,889	515,000	184	161	13%	149	19%
211	19,682	2,855,278	2,355,278	145	120	18%	212	-46%

*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

Table 4: Building thermal load energy demand.

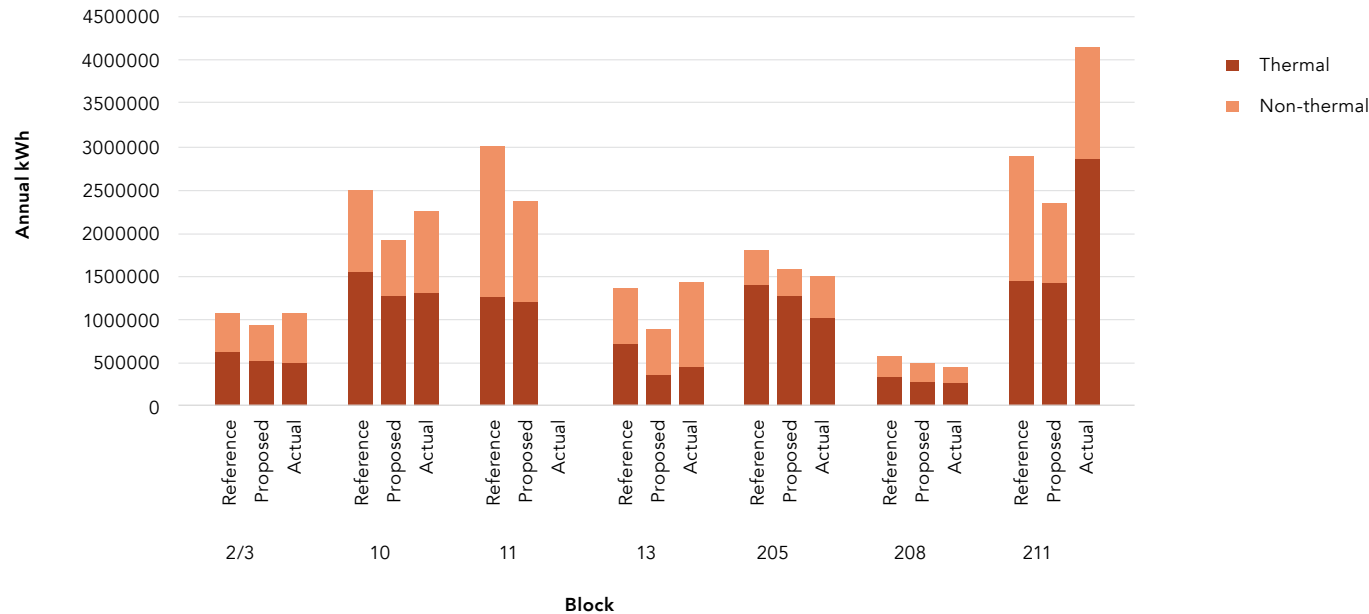
Block	Proportion of load by ZCU (modeled)	Proposed building expected kWh	Actual kWh	Delta (-ve good)	% (-ve good)	Notes
2/3	57%	538,257	516514	-21,743	-4.0%	ZCU is not providing as much thermal energy as it should due to control sequence issues (see Table 5 notes)
10	67%	1,286,773	1,317,146	30,373	2.4%	On target
11	51%	1,208,133	n/a	n/a	n/a	
13	40%	354,861	464,879	110,018	31.0%	Using more from ZCU predominantly from cooling, suspect the model was a bit low, no changes can be made
205A	80%	1,281,334	1,026,426	-254,908	-19.9%	Using much less from ZCU, model may have been too high
208	57%	293,550	271,243	-22,307	-7.6%	Occupancy is lighter than expected, so thermal is better
211	61%	1,436,720	2,851,222	1,414,503	98.5%	Major commissioning issues, building was simultaneously heating and cooling; this is an anomaly

ZC2

Table 5: Building non-thermal load energy demand.

Block	Proposed building expected kWh	Actual kWh	Delta (-ve good)	% (-ve good)	Notes
2/3	406,054	557685.216	151,631	37.30%	Perimetre electric heat is coming on before the air handling unit (AHU) which is tied to district energy; perimeter heat has a Coefficient of Performance (COP) of 1, AHU has a COP of 3.5; building management has been made aware of issue, waiting for improvements.
10	633,783	934751	300,967	47.50%	Requires an investigation into why more non-thermal energy is used than expected, it could be residents or could be the pumps
11	1,160,756	n/a	n/a	n/a	
13	532,292	971959	439,667	82.60%	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	320,333	475,844.41	155,511	48.50%	Requires an investigation into why more non-thermal energy is used than expected, could be residents, could be pumps
208	221,450	204,897.34	-16,553	-7.50%	Explained by light occupancy
211	918,558	1,313,814.07	395,256	43.00%	Possibly explained from overuse of pumps due to commissioning issue; this building was under occupied for most of 2023

Figure 1: Energy Demand Profile by Building





2023 ONE PLANET
APPENDIX

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