

-
- 4.28 Travel Plan initiatives will be prominently featured on the website and during the activity booking process, ensuring that customers receive guidance on accessing the site through walking, cycling, public transport, and a staff and customer site specific shuttle bus.
- 4.29 Initiatives will be regularly communicated to employees through various channels, including workplace meetings, the site-wide intranet, and presentations. The dedicated Travel Plan Coordinator will also provide personalised journey planning advice to employees, ensuring they remain well-informed about their transportation options for accessing their workplace.

Car Park Management Plan

- 4.30 In addition to the above, a range of parking management measures may be employed, as deemed appropriate, to effectively regulate car park demand and inform on parking operations. These measures may include:
- Utilising ANPR Cameras to regulate car park access and monitor the length of stay.
 - Employing car park wardens for on-site supervision.
 - Implementing fines for nuisance parking.
 - Collaborating with MTCBC on additional potential measures to reduce nuisance parking, such as the implementation of Traffic Regulation Orders.
 - Monitoring of the car park by the Travel Plan Coordinator, to determine effectiveness of the Car Park Management Strategy.
 - Travel Plan Coordinator annually reviewing the Public Transport Strategy to suit staff and customer requirements.
- 4.31 The above could be achieved through a Car Park Management Strategy, which could potentially be established as a Planning Obligation, with details submitted for review once site wide operation is confirmed.

SUMMARY

- 4.32 The strategy outlined in this chapter aims to establish a comprehensive long-term management plan, ensuring the car park remains a secure facility for on-site users. This approach assists in mitigating the risk of on-street parking demand in the surrounding area, which could otherwise jeopardise highway safety and disrupt traffic flow.
- 4.33 The following is also proposed:
- Shuttle Bus Transport Strategy that will define bus routes, frequency, and operational details. The shuttle bus service will be accessible to both staff, and for customers, it will be integrated into their activity purchase, making it a convenient and attractive option. This strategy could be established as a Planning Obligation.
 - Full Travel Plan, to refine the initiatives of the Framework, potentially established as a Planning Obligation.
 - Car Park management Strategy, to advise on the detailed aspects of car park operations and outline the long-term management strategy for parking across the site, potentially established as a Planning Obligation.
- 4.34 It is considered that the matters discussed within this Chapter and proposed strategies on a long-term parking management strategy provides reasonable information to inform on **Point 2**.

5.0 CAR PARK SENSIVITY ASSESSMENT

INTRODUCTION

- 5.1 This section considers a sensitivity assessment, to advise on actual car park operations and the availability of parking capacity to accommodate potential spikes in parking, whether attributed to staff or other factors.

DATASETS

- 5.2 User movements for the Snow Dome, Water Park and Indoor / Outdoor Activity Centre have been generated independently, with no consideration of cross visitation. The duration of stay for Snow Dome, Water Park and Indoor / Outdoor Activity Centre users are forecast to be for approximately two hours. This duration has been determined from Application S/OUT/15/0943, which used customer data obtained from Snozone Milton Keynes and Snozone Castleford.
- 5.3 The concern of individuals remaining for more than two hours is addressed through the appraisal focusing on parked vehicles rather than their movements (arrivals/departures). This approach is taken because a vehicle parked for two hours within the car park and replaced by another vehicle for an additional two hours, generated by a different facility, would be the equivalent to a single vehicle occupying a parking space for four hours. This is due to the appraisal being based solely on capacity, not movements, as the space remains continuously occupied.
- 5.4 It is important to note that a two-hour movement exacerbates traffic flows at the site access, with modelling studies presented within the Transport Assessment confirming that the site is assess is appropriate to accommodate this level of traffic.
- 5.5 The datasets prepared for the Snow Dome, Water Park and Indoor / Outdoor Activity Centre do not include employee movements, or cross visitation.
- 5.6 The TRICS Research Report 05/1 forecast that the inclusion of cross visitation would reduce Snow Dome, Water Park, and Indoor / Outdoor Activity Centre traffic on average by 20%. It is considered that by not using this reduction, it provides a worst-case assessment, which would account for the assigning of employees to the car park.
- 5.7 The Snow Dome, Water Park and Indoor / Outdoor Activity Centre datasets are therefore considered reasonable to advise on car park capacity and operation.
- 5.8 The lodges and hotel datasets are derived from the TRICS database, and as such considered reasonable to advise on car park capacity and operation.

TRANSPORT ASSESSMENT METHODOLOGY AND OUTPUT

- 5.9 The datasets presented within the Transport Assessment, outlined at paragraphs 5.2 to 5.3, did not include cross visitation. This was to provide a conservative / worst case scenario for the car park to advise on its capacity to accommodate potential spikes in parking, whether attributed to staff or other factors. The resultant output was that the car park would experience a peak of 819 vehicles parking within the car park, which has capacity for 830 vehicles. All other hours would experience a

level of parking that comprises 0 to 806 vehicles. This parking profile is outlined at **Table 3.6** which is also duplicated as **Table C9** in **Appendix C**.

STAFF MOVEMENTS

- 5.10 The Transport Assessment incorporated staff movement into the trip profile assessment, utilising data from the TRICS database, specifically from the hotel and lodges. The first-principles assessments did not discount double counting between site facilities, this being cross visitation trips. It was considered by using this methodology, a level of contingency was provided in user movements, to accommodate potential spikes in parking, whether attributed to staff or other factors.
- 5.11 The use of the car park by staff has been raised by MTCBC. It is acknowledged that in certain situations, opting for sustainable travel to access the site might be less practical. This is particularly relevant for employees involved in maintenance and cleaning, where vehicles may be necessary for transporting equipment. In such cases, it is anticipated that any vehicles used by this group would likely be confined to the service yards linked to onsite facilities or designated ‘service’ parking spaces near the buildings.
- 5.12 Additionally, it is recognised that there may be instances during operational hours when sustainable transport may not be the most viable option. This is exemplified by staff engaged in evening functions and night-time activities, such as bar work and security. While it is possible that these trips may occur in the broader car park, careful management will ensure minimal impact on peak facility operations, and parking permits may be required.
- 5.13 For the reasons mentioned earlier, a sensitivity assessment has been conducted to provide guidance on car parking arrangements. During this evaluation, careful consideration was given to the information presented in **Table 3.6**, which is also duplicated as **Table C9** in **Appendix C**.
- 5.14 **Table 3.6** offers insights into site-wide movements entering and exiting the car park, encompassing double counting (cross-visitation trips) and staff movements related to the hotel and forest lodges, sourced from TRICS datasets.
- 5.15 The site anticipates a workforce of 842 members, with 241 on-site concurrently. At this stage of the design process, it is expected that the actual demand for employees to use the car park will be minimal, given the careful management of their travel behaviour through the Shuttle Bus Transport Strategy, Full Travel Plan, and Car Park Management Strategy.
- 5.16 To estimate the potential for employee generated car trips, the NTS leisure datasets has been applied, with the projection indicating 106 potential car trips generated by employees. A breakdown of employees that may be concurrently onsite is provided a **Table 5.1**, which also includes details of the anticipated distribution of staff among onsite facilities,

Table 5.1 – Site Wide Employee Levels

Onsite Facility	Volume of Onsite Employees %	Volume of Onsite Employees %	Volume of Onsite Employees That May Travel by Car
Snow Dome	30%	72	32
Water Park	15%	36	16
Indoor / Outdoor Activity Centre	15%	36	16
Hotel	30%	72	32
Lodges	10%	24	11
Total	100%	72	106

ONSITE FACILITY CROSS VISITATIONS

- 5.17 In the Transport Assessment, cross-visitation trips were not factored into the car park operations. The decision to exclude these trips was made to present a more conservative or worst-case scenario for the car park's operational impact on traffic and site access.
- 5.18 Cross-visitation will be generated by the site, involving the movement or visits of individuals between various facilities or destinations. The inclusion of cross-visitation is expected to result in a decrease in vehicle parking demand, a factor not reflected in the outputs provided in **Table C9**.
- 5.19 To accurately represent cross-visitation trips based on the information in **Table C9**, it is necessary to exclude the employment trips generated by the hotel and lodges. Cross-visitation does not impact employment levels, and thus, their inclusion would skew the data.
- 5.20 In assessing the sensitivity of the car park, these trips are required to be removed. This has comprised the 08:00 arrival column within **Table C9** being reduced by 43 vehicles, and the 23:00 departure column having a similar reduction. This adjustment accounts for the 43 spaces within the car park associated with hotel and lodge staff, as indicated by the outputs from the TRICS database and expected employee occupation.
- 5.21 The results of this adjustment are presented in **Table C10** in **Appendix C**. This discount allows the dataset to be appropriate for use in advising on the level of impact of customers completing cross-visitation type trips.
- 5.22 Cross-visitation refers to a person using more than one facility on-site. The business case for the scheme targets a 40% cross-visitation rate, achievable through promotions, discounts, and tailored packages.
- 5.23 Referencing the TRICS Research Report 05/1 "Trip Attraction Rates of Developments with Multiple Retail and Leisure Uses," from December 2005, guidance is provided on how linked trips in developments similar to the Proposed Development might be considered. The report's Executive Summary states that multi-use sites with four or more developments typically reduce the total number of external trips by about 20%.

- 5.24 As the development scheme comprises a multi-use site with several bespoke facilities, a conservative estimate of cross-visitation is provided by applying a 10% discount to customer trips. This approach aims to introduce a contingency level for car park operations, and the outcome of this calculation is detailed in **Table C11** in **Appendix C**.
- 5.25 The assessment outcome provides recommendations for car park operations, with the stipulation that staff are not permitted to park within the facility. These findings are detailed in **Appendix C12** and summarised in **Table 5.2**.

Table 5.2 – Site-wide Car Park Accumulation - Spare Capacity

Time of Day	Weekday			Saturday		
	Car Park Capacity	%	Residual Spaces	Car Park Capacity	%	Residual Spaces
08:00	0	0%	830	0	0%	830
09:00	93	11%	737	59	7%	771
10:00	122	15%	708	196	24%	634
11:00	203	24%	628	307	37%	523
12:00	203	25%	627	381	46%	449
13:00	99	12%	731	552	66%	278
14:00	147	18%	683	617	74%	213
15:00	100	12%	730	699	84%	131
16:00	188	23%	642	711	86%	119
17:00	310	37%	520	625	75%	205
18:00	178	21%	652	324	39%	506
19:00	474	57%	356	522	63%	308
20:00	693	83%	137	641	77%	189
21:00	334	40%	496	248	30%	582
22:00	144	17%	686	131	16%	699
23:00	142	17%	688	122	15%	709

- 5.26 **Table 5.2** projects that customer parking alone will occupy the car park at a range of 83% to 86%, ensuring a minimum of 119 available spaces (Saturday: 86%) during peak times. This figure can suitably accommodate the 106 staff that have the potential to be generated.
- 5.27 The car park provides reasonable capacity to cater to customer parking needs safely and effectively, with the provision resilient to fluctuations in parking demand. A reasonable surplus capacity is in place to accommodate potential spikes in parking, whether attributed to staff or other factors.
- 5.28 Nevertheless, the development scheme is committed to fostering initiatives that encourage future employees to access the site through non-car modes. These initiatives will be implemented through the Shuttle Bus Transport Strategy, Full Travel Plan, and Car Park Management Plan.

SUMMARY

- 5.29 The car park provides reasonable capacity to cater to customer parking needs safely and effectively, with arrangements resilient to fluctuations in parking demand. A reasonable surplus capacity is in place to accommodate potential spikes in parking, whether attributed to staff or other factors, mitigating the risk of nuisance parking within adjacent areas.
- 5.30 The level of parking proposed by this application is not sensitive to periods of increased parking demands, and the risk of congestion within the car park, capacity being reached, or nuisance parking is immaterial.

DRAFT

6.0 SUMMARY

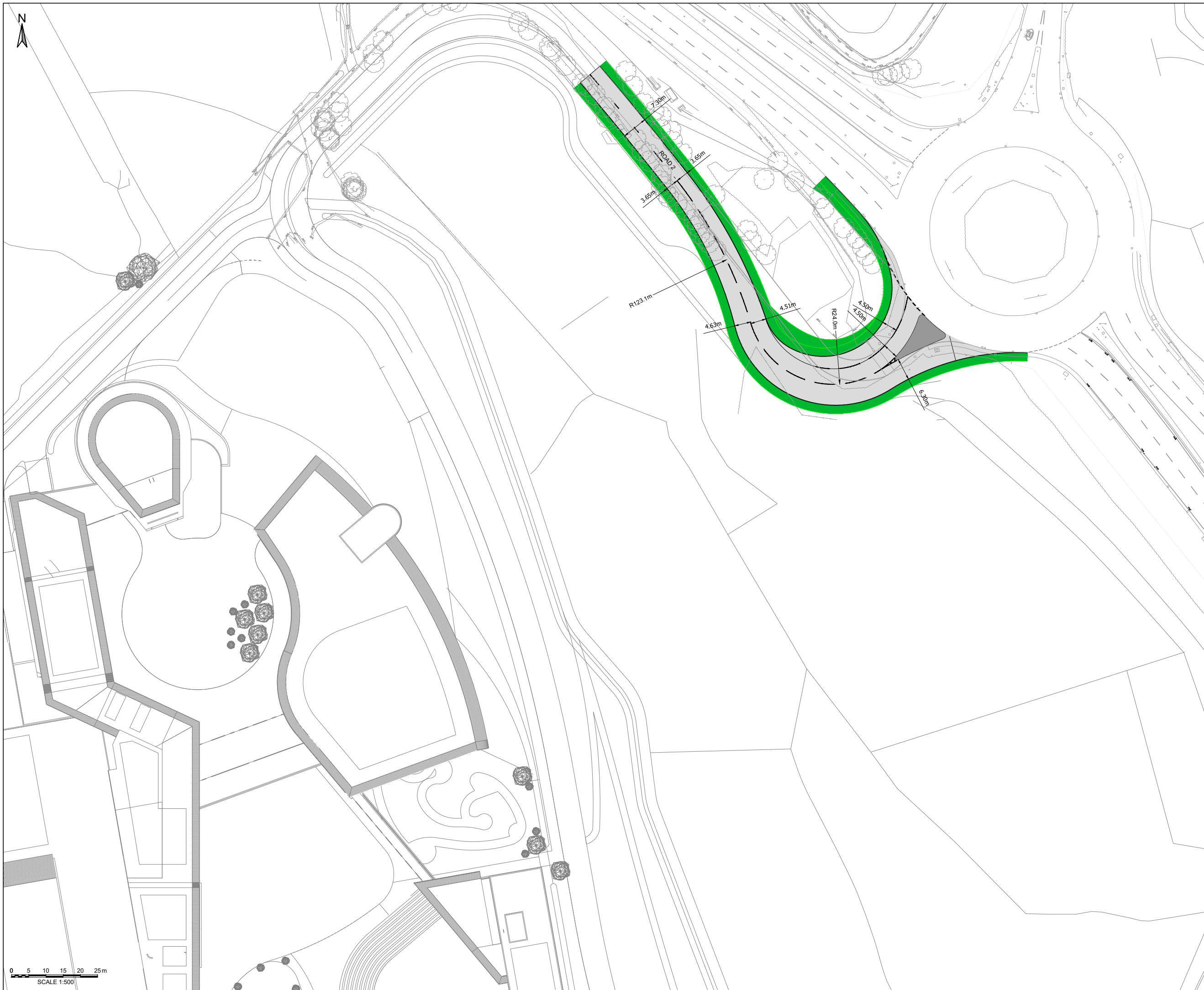
SUMMARY

- 6.1 The document has been prepared to provide additional information on matters raised by MTCBC, which comprise:
- **Point 1:** The proposed secondary emergency access is sub-standard, and its use would result in traffic hazards to the detriment of highway safety and the free flow of traffic.
 - **Point 2:** Insufficient information has been submitted to demonstrate that the proposed off-street parking provision of 830 spaces for vehicles is sufficient to meet the developments demands at peak times, resulting in the potential for on-street parking demand in the vicinity to the detriment of highway safety and the free flow of traffic.
- 6.2 Information on Point 1 is provided within Chapter 2, which confirms that the proposed secondary emergency access has an appropriate layout, and its usage will not pose traffic hazards that could compromise highway safety or impede the flow of traffic.
- 6.3 Information to advise on Point 2 is provided at Chapters 3, 4 and 5. These chapters contain information that outlines the methodology used to quantify the trips generated by the site, describes the characteristics of site users, and presents strategies aimed at promoting sustainable travel among users while ensuring safe and appropriate car park operations.
- 6.4 It is also proposed that the following could be provided to give confidence that these matters will be considered further at the appropriate planning stage(s):
- Shuttle Bus Transport Strategy that will define bus routes, frequency, and operational details. The shuttle bus service will be accessible to both staff, and for customers, it will be integrated into their activity purchase, making it a convenient and attractive option. This strategy could be established as a Planning Obligation.
 - Full Travel Plan, to refine the initiatives of the Framework, potentially established as a Planning Obligation.
 - Car Park management Strategy, to advise on the detailed aspects of car park operations and outline the long-term management strategy for parking across the site, potentially established as a Planning Obligation.
- 6.5 Assessments within the Transport Assessment provide a reasonable and cautious approach, projecting an overestimated car parking demand with a forecasted peak at 99% capacity (820 vehicles).
- 6.6 The car park is likely to reach a maximum capacity of approximately 86% (119 vehicles) due to cross visitation, and this peak is expected for just an hour, leaving significant residual capacity during other operational periods. The development ensures safe and well-suited parking arrangements, featuring reasonable spare capacity to accommodate any increased parking demand, whether from customers or other factors. The scheme effectively mitigates the risk to the adjacent road network in terms of vehicle parking through its thoughtfully designed parking provision and wider strategies.

CONCLUSION

- 6.7 Evidence has been presented to confirm that emergency access can be implemented and managed without causing disruptions to non-site users.
- 6.8 The assessment methodology outlined in the Transport Assessment has been validated, with the assessments showing that the provision of an 830-space car park is adequate to meet the development's demands during peak periods. A strategy has also been discussed to support travel by sustainable modes and reduce the risk of nuisance parking.
- 6.9 The car park provides reasonable capacity to cater to customer parking needs safely and effectively, with arrangements resilient to fluctuations in parking demand. A reasonable surplus capacity is in place to accommodate potential spikes in parking, whether attributed to staff or other factors, mitigating the risk of nuisance parking within adjacent areas.
- 6.10 It is considered that the matters discussed within this Chapter and proposed strategy to collaborate with MTCBC on a long-term parking management strategy provides reasonable information to address **Point 1** and **2**. This is inclusive of committing to providing MTCBC a Car Park Management Strategy, Public Transport Strategy and Full Travel plan at the appropriate design and planning stage.

APPENDIX A: SITE ACCESS LAYOUT



KEY

	Carriageway
	Footway/Cycleway-Footway
	Verge

PRELIMINARY ISSUE

P03	DESIGN UPDATED TO TOPOGRAPHIC SURVEY	04.08.2022	AT	BM	AP				
P02	REVISED MASTERPLAN	19.04.2022	BM	AP	AP				
P01	PRELIMINARY FIRST ISSUE	15.10.2021	AT	BM	AP				
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 **TETRA TECH**

Client
MARVEL LTD

Project Name
RHYDYCAR WEST, MERTHYR TYDFIL

Sheet Title

GENERAL ARRANGEMENT

TTE Project Number	Drawn By	Date	Checked By	Date	Approved By	Date	Scale @ A1	Suitability		
784-B023905	AT	Oct '21	BM	Oct '21	AP	Oct '21	1:500	S0		
Client Project Number	Originator	Volume	System	Level	Location	Type	Code	Role	Number	Revision
B023905	- TTE	- 00	- ZZ	- DR	- CH	- SK001	P03			

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APPENDIX B: SWEEP PATH ASSESSMENT

APPENDIX C: CALCULATION TABLES

Table C1: Trip Profiles for First Principal Datasets

Land Use	Annual Visitors	Month %*	Month Visitors	Weekly Profile Factor	Weekend Share (from Snowdome)*	Weekday Visitors	Weekend Visitors
Snow Dome	750000	8.3%	62500	23.3%	25.4%	1920	3658
Water Park	560000		46667			1433	2731
Indoor / Outdoor Adv	270000		22500			691	1317

*Source: Application S/OUT/15/0943

Table C2: Daily Trip Profile*

Friday		Saturday	
Arrivals	Departures	Arrivals	Departures
2%	0%	2%	0%
6%	0%	2%	0%
4%	2%	7%	2%
12%	6%	6%	2%
4%	4%	9%	7%
6%	12%	10%	6%
7%	4%	11%	9%
3%	6%	13%	10%
11%	7%	11%	11%
7%	3%	9%	13%
0%	11%	0%	11%
25%	7%	14%	9%
12%	0%	4%	0%
3%	25%	2%	14%
0%	12%	0%	4%
0%	3%	0%	2%
100%	100%	100%	100%

*Source: Application S/OUT/15/0943

Table C3: Snow Dome Trip Profile

Time Period	Movement Profile				Trip Profile				Trip Profile - Vehicles 44%*			
	Friday		Saturday		Friday		Saturday		Friday		Saturday	
	Arrivals	Departures	Arrivals	Departures	Arrivals	Departures	Arrivals	Departures	Arrivals	Departures	Arrivals	Departures
08:00	2%	0%	2%	0%	29	0	58	0	13	0	26	0
09:00	6%	0%	2%	0%	111	0	68	0	49	0	30	0
10:00	4%	2%	7%	2%	68	29	252	58	30	13	111	26
11:00	12%	6%	6%	2%	237	111	237	68	104	49	104	30
12:00	4%	4%	9%	7%	77	68	319	252	34	30	141	111
13:00	6%	12%	10%	6%	116	237	382	237	51	104	168	104
14:00	7%	4%	11%	9%	131	77	416	319	57	34	183	141
15:00	3%	6%	13%	10%	58	116	489	382	26	51	215	168
16:00	11%	7%	11%	11%	203	131	397	416	89	57	175	183
17:00	7%	3%	9%	13%	140	58	324	489	62	26	143	215
18:00	0%	11%	0%	11%	0	203	0	397	0	89	0	175
19:00	25%	7%	14%	9%	479	140	523	324	211	62	230	143
20:00	12%	0%	4%	0%	237	0	140	0	104	0	62	0
21:00	3%	25%	2%	14%	48	479	58	523	21	211	26	230
22:00	0%	12%	0%	4%	0	227	0	140	0	100	0	62
23:00	0%	3%	0%	2%	0	48	0	58	0	21	0	26
Total	100%	100%	100%	100%	1920	1920	3658	3658	845	845	1609	1609

*Source, NTS Average distance travelled by purpose and main mode: Great Britain, 2012 - Leisure Category Category

Table C4: Water Park Trip Profile

Time Period	Movement Profile				Trip Profile				Trip Profile - Vehicles 44%*			
	Friday		Saturday		Friday		Saturday		Friday		Saturday	
	Arrivals	Departures	Arrivals	Departures	Arrivals	Departures	Arrivals	Departures	Arrivals	Departures	Arrivals	Departures
08:00	2%	0%	2%	0%	22	0	43	0	10	0	19	0
09:00	6%	0%	2%	0%	83	0	51	0	37	0	22	0
10:00	4%	2%	7%	2%	51	22	188	43	22	10	83	19
11:00	12%	6%	6%	2%	177	83	177	51	78	37	78	22
12:00	4%	4%	9%	7%	58	51	238	188	25	22	105	83
13:00	6%	12%	10%	6%	87	177	285	177	38	78	126	78
14:00	7%	4%	11%	9%	97	58	311	238	43	25	137	105
15:00	3%	6%	13%	10%	43	87	365	285	19	38	161	126
16:00	11%	7%	11%	11%	152	97	296	311	67	43	130	137
17:00	7%	3%	9%	13%	105	43	242	365	46	19	107	161
18:00	0%	11%	0%	11%	0	152	0	296	0	67	0	130
19:00	25%	7%	14%	9%	357	105	390	242	157	46	172	107
20:00	12%	0%	4%	0%	177	0	105	0	78	0	46	0
21:00	3%	25%	2%	14%	36	357	43	390	16	157	19	172
22:00	0%	12%	0%	4%	0	170	0	105	0	75	0	46
23:00	0%	3%	0%	2%	0	36	0	43	0	16	0	19
Total	100%	100%	100%	100%	1433	1433	2731	2731	631	631	1202	1202

*Source, NTS Average distance travelled by purpose and main mode: Great Britain, 2012 - Leisure Category Category

Table C5: Activity Centre Trip Profile

Time Period	Movement Profile				Trip Profile				Trip Profile - Vehicles 44%*			
	Friday		Saturday		Friday		Saturday		Friday		Saturday	
	Arrivals	Departures	Arrivals	Departures	Arrivals	Departures	Arrivals	Departures	Arrivals	Departures	Arrivals	Departures
08:00	2%	0%	2%	0%	10	0	21	0	5	0	9	0
09:00	6%	0%	2%	0%	40	0	24	0	18	0	11	0
10:00	4%	2%	7%	2%	24	10	91	21	11	5	40	9
11:00	12%	6%	6%	2%	85	40	85	24	38	18	38	11
12:00	4%	4%	9%	7%	28	24	115	91	12	11	51	40
13:00	6%	12%	10%	6%	42	85	138	85	18	38	61	38
14:00	7%	4%	11%	9%	47	28	150	115	21	12	66	51
15:00	3%	6%	13%	10%	21	42	176	138	9	18	77	61
16:00	11%	7%	11%	11%	73	47	143	150	32	21	63	66
17:00	7%	3%	9%	13%	50	21	117	176	22	9	51	77
18:00	0%	11%	0%	11%	0	73	0	143	0	32	0	63
19:00	25%	7%	14%	9%	172	50	188	117	76	22	83	51
20:00	12%	0%	4%	0%	85	0	51	0	38	0	22	0
21:00	3%	25%	2%	14%	17	172	21	188	8	76	9	83
22:00	0%	12%	0%	4%	0	82	0	51	0	36	0	22
23:00	0%	3%	0%	2%	0	17	0	21	0	8	0	9
Total	100%	100%	100%	100%	691	691	1317	1317	304	304	579	579

*Source, NTS Average distance travelled by purpose and main mode: Great Britain, 2012 - Leisure Cateogry Category

Table C6: Hotel Trip Profile*

Time Period	Movement Profile				Trip Profile				Trip Profile - Vehicles 44%**			
	Friday		Saturday		Friday		Saturday		Friday		Saturday	
	Arrivals	Departures	Arrivals	Departures	Arrivals	Departures	Arrivals	Departures	Arrivals	Departures	Arrivals	Departures
08:00	0.134	0.290	0.228	0.286	129	278	219	275	57	123	96	121
09:00	0.199	0.195	0.254	0.246	191	187	244	236	84	82	107	104
10:00	0.139	0.139	0.243	0.304	133	133	233	292	59	59	103	128
11:00	0.086	0.146	0.243	0.322	83	140	233	309	36	62	103	136
12:00	0.088	0.105	0.210	0.167	84	101	202	160	37	44	89	71
13:00	0.116	0.127	0.286	0.156	111	122	275	150	49	54	121	66
14:00	0.146	0.139	0.167	0.210	140	133	160	202	62	59	71	89
15:00	0.137	0.134	0.167	0.188	132	129	160	180	58	57	71	79
16:00	0.204	0.134	0.308	0.236	196	129	296	227	86	57	130	100
17:00	0.297	0.163	0.293	0.159	285	156	281	153	125	69	124	67
18:00	0.234	0.135	0.312	0.232	225	130	300	223	99	57	132	98
19:00	0.176	0.139	0.280	0.195	169	133	269	187	74	59	118	82
20:00	0.132	0.079	0.218	0.215	127	76	209	206	56	33	92	91
21:00	0.128	0.128	0.107	0.120	123	123	103	115	54	54	45	51
22:00	0.000	0.000	0.000	0.000	0	0	0	0	0	0	0	0
23:00	0.000	0.000	0.000	0.000	0	0	0	0	0	0	0	0
Total	2.216	2.053	3.316	3.036	2128	1971	3184	2915	936	867	1401	1282

*Source: TRICS

**Source, NTS Average distance travelled by purpose and main mode: Great Britain, 2012 - Leisure Cateogry Category

Table C7: Lodges Trip Profile*

Time Period	Movement Profile				Trip Profile				Trip Profile - Vehicles 44%**			
	Friday		Saturday		Friday		Saturday		Friday		Saturday	
	Arrivals	Departures	Arrivals	Departures	Arrivals	Departures	Arrivals	Departures	Arrivals	Departures	Arrivals	Departures
08:00	0.030	0.041	0.023	0.039	2	3	2	3	1	1	1	1
09:00	0.045	0.092	0.052	0.086	3	6	4	6	1	3	2	3
10:00	0.056	0.136	0.081	0.107	4	9	6	7	2	4	2	3
11:00	0.066	0.131	0.098	0.088	5	9	7	6	2	4	3	3
12:00	0.074	0.101	0.126	0.091	5	7	9	6	2	3	4	3
13:00	0.073	0.072	0.137	0.092	5	5	9	6	2	2	4	3
14:00	0.083	0.072	0.127	0.085	6	5	9	6	3	2	4	3
15:00	0.093	0.070	0.119	0.079	6	5	8	5	3	2	4	2
16:00	0.104	0.071	0.108	0.093	7	5	7	6	3	2	3	3
17:00	0.136	0.074	0.100	0.105	9	5	7	7	4	2	3	3
18:00	0.109	0.075	0.076	0.084	8	5	5	6	3	2	2	3
19:00	0.067	0.057	0.062	0.064	5	4	4	4	2	2	2	2
20:00	0.061	0.033	0.045	0.042	4	2	3	3	2	1	1	1
21:00	0.030	0.023	0.035	0.025	2	2	2	2	1	1	1	1
22:00	0.015	0.018	0.009	0.006	1	1	1	0	0	1	0	0
23:00	0.000	0.000	0.000	0.000	0	0	0	0	0	0	0	0
Total	1.042	1.066	1.198	1.086	72	73	83	75	32	32	36	33

*Source: TRICS **Source, NTS Average distance travelled by purpose and main mode: Great Britain, 2012 - Leisure Cateogry Category

Table C8: Site-wide Trip Profile

Time Period	Trip Profile				Trip Profile - Vehicles 44%**			
	Friday		Saturday		Friday		Saturday	
	Arrivals	Departures	Arrivals	Departures	Arrivals	Departures	Arrivals	Departures
08:00	192	281	343	277	84	124	151	122
09:00	428	194	390	242	189	85	172	107
10:00	280	204	769	422	123	90	338	185
11:00	586	383	739	458	258	169	325	201
12:00	253	250	883	697	111	110	389	307
13:00	361	626	1089	656	159	275	479	288
14:00	421	301	1046	880	185	133	460	387
15:00	260	378	1198	991	114	166	527	436
16:00	631	409	1139	1110	278	180	501	488
17:00	590	284	971	1189	260	125	427	523
18:00	232	563	305	1064	102	248	134	468
19:00	1182	433	1374	875	520	190	605	385
20:00	630	78	508	209	277	34	224	92
21:00	227	1133	227	1218	100	499	100	536
22:00	1	480	1	296	0	211	0	130
23:00	0	102	0	122	0	45	0	54
Total	6243	6089	10972	10695	2747	2679	4828	4706

Table C9: Site-wide Car Park Accumulation

Time of Day	Weekday			Saturday		
	Arrivals	Departures	Car Park Capacity	Arrivals	Departures	Car Park Capacity
08:00	84	124	0	151	122	29
09:00	188	85	103	172	106	95
10:00	123	90	136	338	186	247
11:00	258	169	225	325	202	370
12:00	111	110	226	389	307	452
13:00	159	275	110	479	289	642
14:00	185	132	163	460	387	715
15:00	114	166	111	527	436	806
16:00	278	180	209	501	488	819
17:00	260	125	344	427	523	723
18:00	102	248	198	134	468	389
19:00	520	191	527	605	385	609
20:00	277	34	770	224	92	741
21:00	100	499	371	100	536	305
22:00	0	211	160	0	130	175
23:00	0	45	115	0	54	121

Table C10: Site-wide Car Park Accumulation - Hotel and Lodge Staff Movement Discount

Time of Day	Weekday			Saturday		
	Arrivals	Departures	Car Park Capacity	Arrivals	Departures	Car Park Capacity
08:00	41	124	0	108	122	0
09:00	188	85	103	172	106	66
10:00	123	90	136	338	186	218
11:00	258	169	225	325	202	341
12:00	111	110	226	389	307	423
13:00	159	275	110	479	289	613
14:00	185	132	163	460	387	686
15:00	114	166	111	527	436	777
16:00	278	180	209	501	488	790
17:00	260	125	344	427	523	694
18:00	102	248	198	134	468	360
19:00	520	191	527	605	385	580
20:00	277	34	770	224	92	712
21:00	100	499	371	100	536	276
22:00	0	211	160	0	130	146
23:00	0	2	158	0	11	135

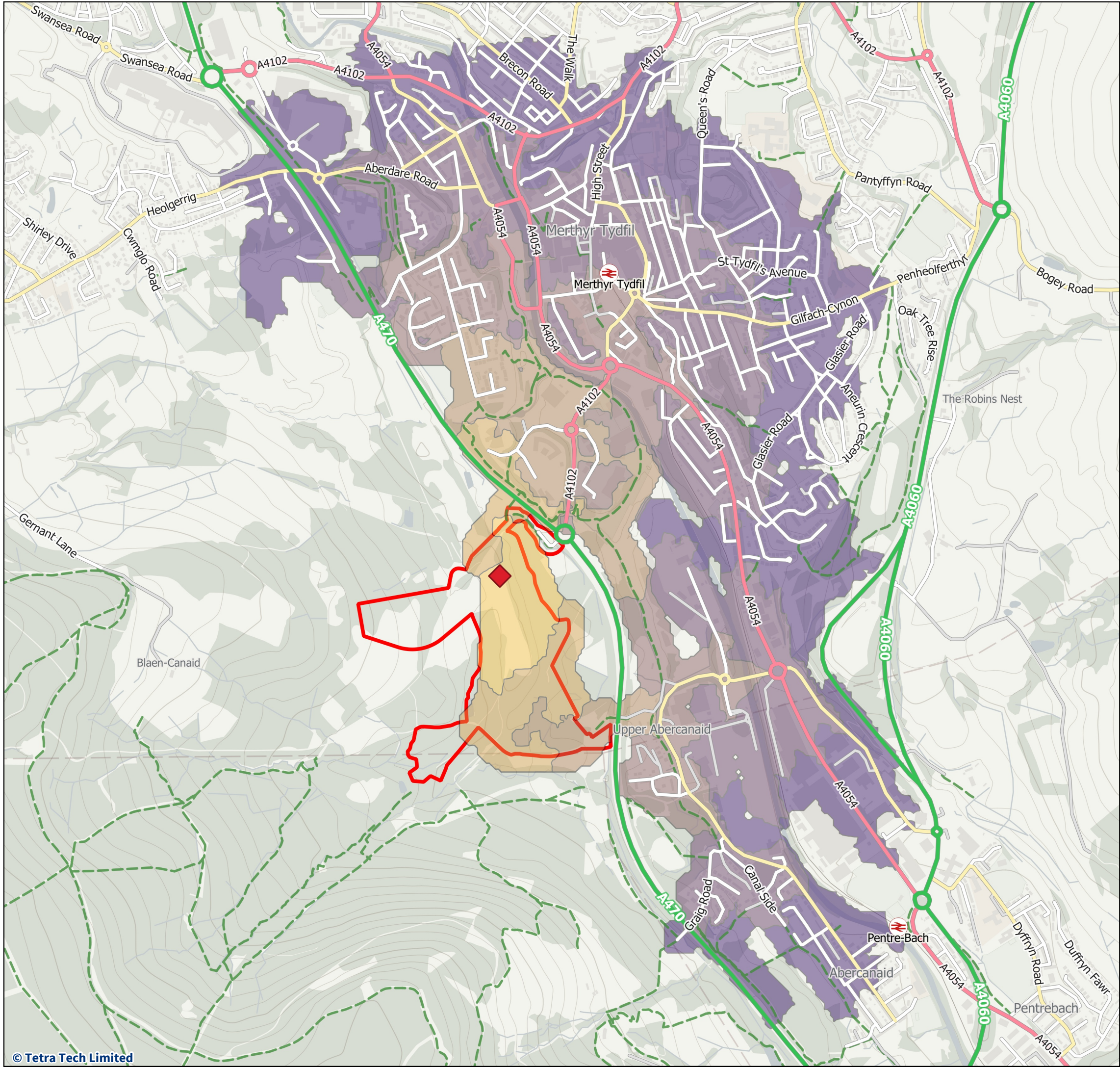
Table C11: Site-wide Car Park Accumulation - Cross Visitation Factor

Time of Day	Weekday			Saturday		
	Arrivals	Departures	Car Park Capacity	Arrivals	Departures	Car Park Capacity
08:00	37	112	0	97	110	0
09:00	169	77	93	155	95	59
10:00	111	81	122	304	167	196
11:00	232	152	203	293	182	307
12:00	100	99	203	350	276	381
13:00	143	248	99	431	260	552
14:00	167	119	147	414	348	617
15:00	103	149	100	474	392	699
16:00	250	162	188	451	439	711
17:00	234	113	310	384	471	625
18:00	92	223	178	121	421	324
19:00	468	172	474	545	347	522
20:00	249	31	693	202	83	641
21:00	90	449	334	90	482	248
22:00	0	190	144	0	117	131
23:00	0	2	142	0	10	122

Table C12: Site-wide Car Park Accumulation - Spare Capacity

Time of Day	Weekday			Saturday		
	Car Park Capacity	%	Residual Spaces	Car Park Capacity	%	Residual Spaces
08:00	0	0%	830	0	0%	830
09:00	93	11%	737	59	7%	771
10:00	122	15%	708	196	24%	634
11:00	203	24%	628	307	37%	523
12:00	203	25%	627	381	46%	449
13:00	99	12%	731	552	66%	278
14:00	147	18%	683	617	74%	213
15:00	100	12%	730	699	84%	131
16:00	188	23%	642	711	86%	119
17:00	310	37%	520	625	75%	205
18:00	178	21%	652	324	39%	506
19:00	474	57%	356	522	63%	308
20:00	693	83%	137	641	77%	189
21:00	334	40%	496	248	30%	582
22:00	144	17%	686	131	16%	699
23:00	142	17%	688	122	15%	709

APPENDIX D: WALKING ISOCHRONE



Accessibility by Walking (Main Site)

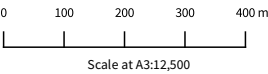
Rhydyar West
Marvel Ltd

Legend

- Site
- Access by Walking**
 - 0-5 mins / 0-400m
 - 5-10 mins / 400-800m
 - 10-15 mins / 800-1.2km
 - 15-20 mins / 1.2-1.6km
 - 20-25 mins / 1.6-2.0km
 - 25-30 mins / 2.0-2.4km
- ◆ Isochrone Origin
- Public Rights of Way

Drawn by: BM
Checked by: AP
Office: Cardiff

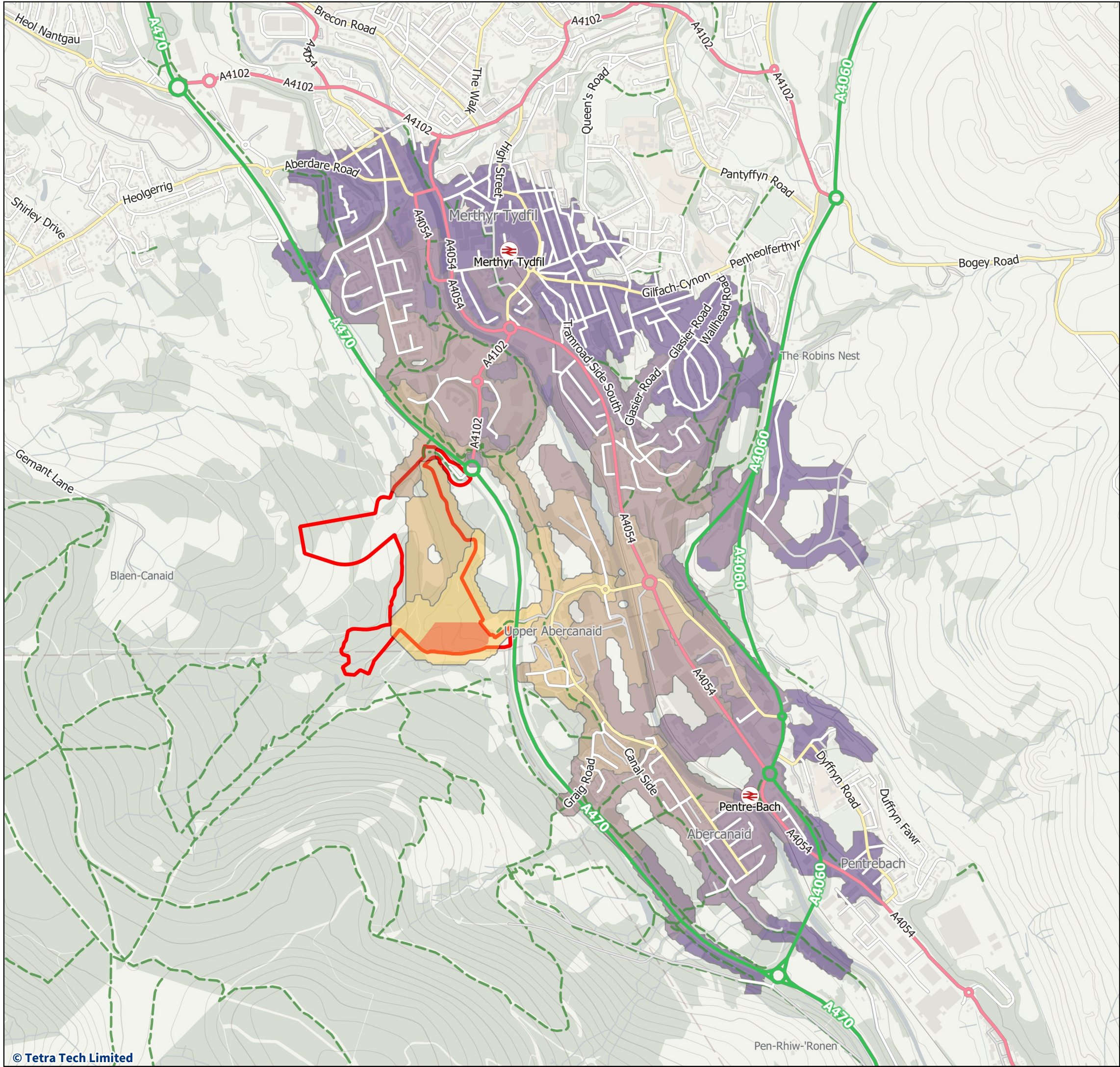
Drawing No.: 784-B023905-0005.1
Revision No.: 0001



20 January 2022

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Accessibility by Walking (Forest Lodges)

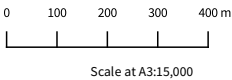
Rhydyar West
Marvel Ltd

Legend

- Site
- Isochrone Origin
- Access by Walking**
 - 0-5 mins / 0-400m
 - 5-10 mins / 400-800m
 - 10-15 mins / 800-1.2km
 - 15-20 mins / 1.2-1.6km
 - 20-25 mins / 1.6-2.0km
 - 25-30 mins / 2.0-2.4km
- Public Rights of Way

Drawn by: BM
Checked by: AP
Office: Cardiff

Drawing No.: 784-B023905-0005.2
Revision No.: 0001



20 January 2022

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Technical Note 01

Project:	Rhydycar West, Merthyr Tydfil	Office:	Cardiff
Project №:	784-B023905	Prepared by:	BM
Client:	Marvel Ltd	Approved by:	AP
Date:	18.01.2024	Status:	For Information
Subject:	Response to MTCBC Comments		

EXECUTIVE SUMMARY

This Technical Note details the results of the comparison exercise requested by MTCBC on the potential volume of peak time users on the snow dome piste and specifies that the car park provided under Application P/23/0065 will operate with a maximum utilisation of 613 spaces during a peak month weekday and 757 spaces during a peak month weekend. Consequently, the car park will maintain a spare capacity level of 217 spaces during a peak month weekday and 57 spaces during a peak month weekend. The methodology to determine this position is provided within this document, with resultant calculations appended.

The additional assessments have shown that during the peak month, the car park will operate at a 74% occupation during a weekday for a one-hour period, dropping to 29% in the subsequent hour. On Saturdays, it may experience a peak occupation of 93% for a one-hour period, dropping to 33% in the following three hours. During all other months of the year, the car park will operate with a much higher level of capacity.

The information within this document adheres to the previous car park capacity assessments submitted in support of Application P/23/0065, evidencing that the car park will operate at a safe level and not exceed capacity, which is deemed appropriate to serve the development proposal.

1 INTRODUCTION

- 1.1 Tetra Tech has been commissioned to act as the transport and highways consultant in support of Planning Application P/23/0065 for land west of the A470 and to the south of the village of Heolgerrig in Merthyr Tydfil County Borough Council (MTCBC).
- 1.2 Planning Application P/23/0065 proposes the development of:
 - 39,200 sqm Indoor Snowdome.
 - 7,500 sqm Water Park.
 - 27,400 sqm Hotel (418 beds).
 - 24,000 sqm Indoor / Outdoor Activity Centre; and,
 - 30 Forest Lodges (up to 2,000 sqm).

- 1.3 Merthyr Tydfil County Borough Council (MTCBC) appointed Mott MacDonald to prepare a comprehensive, independent review of the Transport Assessment and Travel Plan prepared in support of Application P/23/0065.
- 1.4 MTCBC have raised a highway objection, which was discussed in detail at a meeting between MTCBC and Tetra Tech on Tuesday November 11th, 2023. The areas that MTCBC requested further information on are listed below and in full at **Appendix A**:
- Following the meeting on Tuesday 23/11 with the Rhydycar development team where we agreed Tetra Tech would provide further background information on the trip generation, and parking demand estimate for Snow Dome. Ben Maliphant from Tetra Tech provided links to the Swindon snow centre Transport Assessment submitted to the Swindon planning authority. Whilst the snow slope element of the Swindon development has still to be constructed, the transport assessment drew on survey/record data from existing snow centres at Milton Keynes and Castleford and this was used to calculate trip generation, mode shares and parking demand at peak times for the proposed Swindon operation. It should be noted that this type of information was requested during our initial review of the Rhydycar application and has not been provided until now.
 - It clearly shows that many of the concerns raised in our initial reviews of the Rhydycar development were addressed by the Swindon applicant. While it is not our role to assess the outcome of conducting an impact assessment based on the Swindon data it is apparent any reassessment would materially affect the peak period parking demands and potentially the wider highway impacts. We have itemised some of the references and details below but the key aspects are:
 - The Swindon application examines the size of the proposed slope relative to the potential volume of peak time use as well as the possible maximum safe user limits.
 - The Swindon application separately assesses each element of the development (snow centre, residential, retail etc) before all the results are aggregated. Whereas the Rhydycar approach sums the annual patronage estimate for the main elements (snow centre, swimming activities and outdoor facility) and assumes that each will operate in the same way throughout the year.
 - The Rhydycar application assumes a 'flat' line demand for the snow centre throughout the year whereas the Swindon application is based on a monthly profile using data from existing facilities. This shows that typically demand can be expected to be significantly higher in the winter months compared to the summer.
- 1.5 This report has been prepared to provide technical information to address the matters raised by MTCBC.

2 POINT 1: POTENTIAL VOLUME OF PEAK TIME USE VIA SWINDON METHODOLOGY

- 2.1 The calculation of the peak time trip generation for Rhydycar West was based upon a standard and accepted trip generation methodology, which has been accepted by Welsh Government (SWTRA) who raise no issues.
- 2.2 However, MTCBC have requested that a comparison is completed on the potential volume of peak time users on the snow dome piste, comparing the Application's accepted methodology against that used by Application S/OUT/15/0943 for the construction of Snow Centre, Swindon.
- 2.3 Application S/OUT/15/0943 provided a methodology for calculating the potential volume of peak time users on an indoor snow dome piste based upon experiences at Castleford and Milton Keynes. It should be noted that this estimates the peak time users on the piste, and does not include ancillary visitor numbers, for example those preparing for a session, changing after a session, or using any other on-site facilities (e.g. a

café). Application S/OUT/15/0943, Castleford and Milton Keynes derive the potential volume of peak time use based upon the length and width of the piste.

- 2.4 Following MTCBC's request, this alternative methodology has been used to compare the data provided by Application S/OUT/15/0943 and forecast the volume of peak time users on the piste at Rhydyar West. The results of this assessment are shown in **Table 1**.
- 2.5 It is important to note that this is an Outline Application, with the width of the piste a matter for detailed design.

Table 1 – Snow Dome: Forecast Volume of Peak Time Use

Site	Piste Length	Piste Width	Safe User Limits	Annual Visitors
Milton Keynes	170	40	263	206,396
Castleford	170	40	302	
Swindon	170	40	280	210,000
Rhydyar West				
Calculation 1: Assume 1:1 relationship for length and width	400	50	824	617,647
Calculation 2: Assume 1:1 relationship for width and 0.75:1 for length			618	463,235

Calculation 1 is derived by calculating the factor of how many times longer and wider the piste at Rhydyar West is compared to Swindon (2.35x longer and 1.25x wider). The peak user number at Swindon is then multiplied by 2.35 and 1.25 to estimate the peak user numbers at Rhydyar West, given the increased size of the piste.

Calculation 2 is as above, but rather than assuming a 1:1 relationship between piste length, it assumes a 0.75:1 relationship. The calculation is therefore Swindon multiplied by 1.25 (width factor) and 1.77 (amended length factor).

- 2.6 **Table 1** indicates that if the Swindon methodology were to be followed, it would determine that Rhydyar West has the capacity for approximately 618-824 users to be on slope at any one time. This corresponds to approximately 463,235–617,647 visitors per annum.
- 2.7 The calculated max user numbers are inside the figure of 750,000 visitors per year that has been used in deriving the Rhydyar West Snow Dome forecast trip generation. Therefore, if the site operated to the same behaviour as Milton Keynes / Castleford / Swindon, the vehicular trip generation of the development would be significantly lower than that submitted in the Transport Assessment. Nonetheless, the applicant stands by the business case figure of 750,000 annual snow centre visitors.
- 2.8 The local highway network and site car park would operate with a greater level of residual capacity than forecast, further mitigating any concerns that MTCBC may have over network capacity, car parking capacity and the likelihood for nuisance parking in Merthyr Tydfil.
- 2.9 It is therefore considered that the results presented in the Transport Assessment are robust.

3 POINT 2: USE OF DATA FROM EXISTING SNOW CENTRES

3.1 MTCBC commented that:

- “Whilst the snow slope element of the Swindon development has still to be constructed, the transport assessment drew on survey/record data from existing snow centres at Milton Keynes and Castleford and this was used to calculate trip generation, mode shares and parking demand at peak times for the proposed Swindon operation. It should be noted that this type of information was requested during our initial review of the Rhydyar application and has not been provided until now.”

3.2 Paragraph 7.8 of the submitted Rhydyar West Transport Assessment states that:

- “Trip profiles for the Snow Centre, Water Park and Indoor/Outdoor Activity centre have been derived from methodologies and customer forecasts consented under Application S/OUT/15/0943 for the construction of Snow Centre Swindon (Land at North Star), which forecast trips based on information obtained from Snozone Milton Keynes and Snozone Castleford.”

3.3 Data recorded from existing snow centres at Milton Keynes and Castleford was used to:

- Derive the monthly profile of visitors to the Snow Dome, Water Park, and Activity Centre for the Assessment 2 Peak Period. This is illustrated in **Table 7.6, 7.11 and 7.15** of the **submitted Transport Assessment**.
- Derive the weekly profile of visitors to the Snow Dome, Water Park, and Activity Centre for Assessment 1 and 2. This is illustrated in **Table 7.3, 7.7, 7.9, 7.11, 7.13 and 7.15** of the **submitted Transport Assessment**.
- Derive the hourly arrival and departure profile of visitors to the Snow Dome, Water Park, and Activity Centre for Assessment 1 and 2. This is illustrated in **Table 7.4 and 7.8** of the **submitted Transport Assessment**.

3.4 Tetra Tech refer MTCBC to the submitted Transport Assessment to ensure confidence that data from existing snow centres at Milton Keynes and Castleford has been used to calculate trip generation and parking demand at peak times.

4 POINT 3: REALISTIC PEAK SCENARIO

4.1 The submitted TA undertook assessment for two scenarios, these were:

- Assessment 1 – An average profile, where visitor movement remains ‘flat’ through the year; and
- Assessment 2 – A worst case peak profile, where all peak visitor movements occurred at the same time. This represents an unrealistic maximum as each facility will experience a different peak period / month throughout the year.

4.2 MTCBC have requested that the application separately assesses each element of the development, to confirm a trip profile that represents a true peak period for the site. This being when the site will experience its largest throughput of visitors, thus forecasting a “*realistic peak period*.”

INDIVIDUAL PEAK PERIODS

4.3 This section outlines how visitor profiles for each facility have been calculated. It should be read in conjunction with the assessments provided at **Appendix A**.

Snow Centre

- 4.4 As detailed in Paragraph 3.3, data from Application S/OUT/15/0943 has been used to determine the monthly profile of the Snow Centre. This is reproduced in **Table C2 of Appendix A** and shows that the peak period for the Snow Centre is February, when 13.8% of the annual visitors are forecast.

Water Park

- 4.5 To calculate the monthly profile for the Water Park, information has been obtained from the consented Therme Manchester Application 111318/FUL/23, which can be reviewed at the Trafford Council planning portal.
- 4.6 Application 111318/FUL/23 detailed the forecast breakdown of visits during average and peak periods, refer to **Table C1 of Appendix A**. Utilising this consented information, a monthly visitor profile has been derived for the Water Park at Rhydycar West, refer to **Table C2 of Appendix A**. This shows that the peak period for the Water Park is August, when 11.5% of the annual visitors are forecast.

Indoor Activity Centre

- 4.7 Application 111318/FUL/23 data has been used to calculate the trip profile for the indoor activity centre. This is considered reasonable given that both facilities share a common objective of providing entertainment and recreational opportunities for individuals and families in an indoor setting. The trip profile is outlined at **Table C2 of Appendix A**, which shows that the peak period for the Indoor Activity Centre is August, when 11.5% of the annual visitors are forecast.

Outdoor Activity Centre

- 4.8 The outdoor activity centre is expected to exhibit a distinct trip profile compared to the other facilities on the site. This distinction arises from the anticipated decrease in visitors during the winter months, attributed to a combination of factors such as adverse weather conditions, limitations on seasonal activities, reduced daylight hours, and operational safety concerns.
- 4.9 A first principles approach has therefore been used, which utilises Application 111318/FUL/23 as a baseline dataset. This dataset has been refined to be representative of an outdoor activity centre, with the site forecasted to operate at one-third capacity during the winter months. This discount has been reallocated to the summer months, which would likely be the peak operation for the facility given favourable weather, school events, seasonal activities, extended opening hours, increased length of daylight hours, and aligning with the local tourism season for outdoor activities (e.g., hiking, biking, etc). The trip profile for the facility is outlined at **Table C2 of Appendix A**.
- 4.10 This assessment indicates that the peak period for the Outdoor Activity Centre is August, when 13.8% of the annual visitors are forecast.

Hotel and Forest Lodges

- 4.11 The forecasted annual visitation of 1.58 million at Rhydycar West includes all on-site facilities, encompassing the hotel and lodges. Consequently, during the site-wide peak period, the hotel and lodges are expected to

be occupied by guests intending to utilise on-site attractions during their stay. This assumption aligns with the common practice observed in other hotels that offer on-site amenities such as golf, spas, etc.

‘REALISTIC PEAK PROFILE’

- 4.12 **Table C3** outlines the annual visitor profile for the site, which confirms that the site wide peak period will be December, when 155,235 visitors are forecast. This reflects 91,775 visitors to the snow dome, 49,490 visitors to the water park, 9,023 visitors to the indoor activity centre and 4,946 visitors to the outdoor activity centre.
- 4.13 **Table C4** outlines that the peak month for visitors to the site will be December. This details that 4,513 visitors are forecast on a December weekday, with 8,458 visitors forecast on a December weekend.
- 4.14 As detailed in the submitted TA, record data from existing snow centres at Milton Keynes and Castleford was used to derive the hourly arrival and departure profile of visitors to the Snow Dome, Water Park, and Activity Centre. Refer to **Table C5** of **Appendix A** for the hourly profile.
- Snow Dome: The total people and vehicle trip profile for the Snow Dome is shown in **Table C6** of **Appendix A**.
 - Water Park: The total people and vehicle trip profile for the Water Park is shown in **Table C7** of **Appendix A**.
 - Activity Centre: The total people and vehicle trip profile for the Activity Centre is shown in **Table C8** of **Appendix A**.
 - Site Wide Trip Profile: The Site Wide Trip profile is shown in **Table C9** of **Appendix A**. This illustrates the total arrivals and departures each hour for both total visitors and vehicles during the December period.

CAR PARK ACCUMULATION

- 4.15 In the TRICS Research Report 05/1, titled "Trip Attraction Rates of Developments with Multiple Retail and Leisure Uses," dated December 2005, guidance is provided on how linked trips in developments akin to the Proposed Development might be assessed. The report's Executive Summary indicates that multi-use sites with four or more developments typically reduce the overall number of external trips by approximately 20%.
- 4.16 The trip generation associated with Application 111318/FUL/23 was approved, inclusive of a 15% reduction in trips due to cross-visitation between multiple attractions. This approved cross-visitation factor has been incorporated into the site-wide car park calculations for Rhydycar West, adhering to TRICS guidelines and having recently received approval for a similar facility projected to accommodate 1.5 million visitors annually.
- 4.17 The results of this assessment are shown in **Table C11** of **Appendix A**, which illustrates that the site car park is forecast to operate with a maximum utilisation of 613 spaces during a December weekday, and 757 spaces during a December weekend.

CAR PARK SPARE CAPACITY

- 4.18 **Table C12** of **Appendix A** illustrates the forecast spare capacity of the car park at Rhydycar West during the December period.

- 4.19 **Table C12** highlights that during the peak month, the car park will operate at a 74% (217 spare spaces) occupation during a weekday for a one-hour period, dropping to 29% (591 spare spaces) in the subsequent hour. On Saturdays, it may experience a peak occupation of 93% (57 spare spaces) for a one-hour period, dropping to 33% (553 spare spaces) in the following three hours. During all other months of the year, the car park will operate with a much higher level of capacity.
- 4.20 It should be noted that while the methodology detailed above results in 57 space capacity for an hour, the advanced booking system (see the submitted Travel Plan) and Car Park Management Strategy that will be implemented will smooth this 'spike' in demand. In reality, the site will operate with a greater level of residual capacity through the implementation of these measures.

5 SUMMARY AND CONCLUSION

SUMMARY

- 5.1 MTCBC requested that a comparison exercise is completed, to forecast the potential volume of peak time use on the Snow Dome piste, using the methodology provided at Swindon under Application S/OUT/15/0943. This is provided in **Chapter 2**, which highlights that the methodology consented under Application S/OUT/15/0943 would forecast a maximum of 618-824 people at any one time.
- 5.2 The calculated maximum user numbers are inside the figure of 750,000 visitors per year that has been used in deriving the Rhydyar West Snow Dome forecast trip generation, submitted in the TA. Therefore, if the site operated to the same behaviour as Milton Keynes / Castleford / Swindon, the vehicular trip generation of the development would be significantly lower than that submitted in the Transport Assessment.
- 5.3 The local highway network and site car park would operate with a greater level of residual capacity than forecast, further mitigating any concerns that MTCBC may have over network capacity, car parking capacity and the likelihood for nuisance parking in Merthyr Tydfil.
- 5.4 MTCBC also requested further information on the use of data from existing Snow Centres. This is detailed in **Chapter 3**, which outlines the sources of existing data that was submitted within the Transport Assessment. Tetra Tech refer MTCBC to the submitted Transport Assessment to ensure confidence that data from existing snow centres has been used.
- 5.5 MTCBC also requested that the application separately assesses each element of the development before aggregating the results to form a "realistic peak period". This is provided in **Chapter 4**, concluding that during a December site-wide peak period, the car park would operate with a worse case spare capacity of 57 spaces.

CONCLUSION

- 5.6 The information within this document adheres to the previous car park capacity assessments submitted in support of Application P/23/0065, evidencing that the car park will operate at a safe level and not exceed capacity, which is deemed appropriate to serve the development proposal.

- 5.7 The additional assessments have shown that during the peak month, the car park will operate at a 74% occupation during a weekday for a one-hour period, dropping to 29% in the subsequent hour. On Saturdays, it may experience a peak occupation of 93% for a one-hour period, dropping to 33% in the following three hours. During all other months of the year, the car park will operate with a much higher level of capacity.
- 5.8 It should be noted that while the methodology detailed above results in 57 space capacity for an hour, the advanced booking system (see the submitted Travel Plan) and Car Park Management Strategy that will be implemented will smooth this 'spike' in demand. In reality, the site will operate with a greater level of residual capacity through the implementation of these measures.
- 5.9 The advice provided within this document broadly accords to the advice that has been presented to MTCBC in previous submissions. The materials within this document therefore validate the appropriateness of the car parking provision, evidencing that safe and suitable parking can be provided for future site users.

APPENDIX A – ASSESSMENT TABLES

Table C1: Trip Profiles from Therme Manchester (Application 111318/FUL/23)

	Visitor Numbers
Annual Visitors	1,500,000
Avg Daily - Typical Day	2,850
Avg Daily - Typical Weekend	5,750
Avg Daily - Holiday Day	5,750
Avg Daily - Holiday Weekend	8,600
Typical Weekday (44 weeks)	627,000
Typical Weekends (44 weeks)	506,000
Holiday Weekdays (8 weeks)	230,000
Holiday Weekends (8 weeks)	137,600
Percent of annual visitors typical week	1.7%
Percent of annual visitors holiday week	3.1%

Table C2: Rhydycar West Monthly Trip Profiles

Facility	Q1			Q2			Q3			Q4		
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Snow Dome^	13.2%	13.8%	9.9%	6.7%	5.4%	4.2%	4.4%	7.4%	5.3%	8.2%	9.2%	12.2%
Water Park*	7.5%	6.9%	7.5%	8.8%	7.5%	8.8%	8.8%	11.5%	7.5%	8.8%	7.5%	8.8%
Activity Centre*	7.5%	6.9%	7.5%	8.8%	7.5%	8.8%	8.8%	11.5%	7.5%	8.8%	7.5%	8.8%

^ data sourced from Snow Centre, Swindon (North Star) Application S/OUT/15/0943,* data sourced from Therme, Manchester Application 111318/FUL/23

Table C3: Rhydycar West Monthly Visitors

Facility	Q1			Q2			Q3			Q4			Annual Visitors
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Snow Dome	99,159	103,167	74,336	50,473	40,742	31,836	33,278	55,306	39,870	61,298	68,759	91,775	750,000
Water Park	41,949	38,453	41,949	49,490	41,949	49,490	49,490	64,573	41,949	49,490	41,949	49,490	560,000
Activity Centre	11,841	10,854	22,750	26,840	22,750	26,840	26,840	35,019	22,750	26,840	22,750	13,969	270,000
Total Visitors	152,949	152,474	139,035	126,803	105,441	108,166	109,608	154,899	104,569	137,628	133,457	155,235	1,580,000

Table C4: Trip Profiles for First Principal Datasets

Land Use	Annual Visitors	December Month %*	Month Visitors	Weekday Share	Weekend Day Share	Weekday Visitors	Weekend Day Visitors
Snow Dome	750,000	12%	91,775	13%	25%	2,819	5,371
Water Park	560,000	9%	49,490	12%	21%	1,321	2,407
Indoor Adventure Centre	270,000	9%	9,023	12%	21%	241	439
Outdoor Adventure Centre		3%	4,946	12%	21%	132	241

*Source: Application S/OUT/15/0943

Table C5: Daily Trip Profile*

Time Period	Friday		Saturday	
	Arrivals	Departures	Arrivals	Departures
08:00	2%	0%	2%	0%
09:00	6%	0%	2%	0%
10:00	4%	2%	7%	2%
11:00	12%	6%	6%	2%
12:00	4%	4%	9%	7%
13:00	6%	12%	10%	6%
14:00	7%	4%	11%	9%
15:00	3%	6%	13%	10%
16:00	11%	7%	11%	11%
17:00	7%	3%	9%	13%
18:00	0%	11%	0%	11%
19:00	25%	7%	14%	9%
20:00	12%	0%	4%	0%
21:00	3%	25%	2%	14%
22:00	0%	12%	0%	4%
23:00	0%	3%	0%	2%
Total	100%	100%	100%	100%

*Source: Application S/OUT/15/0943

Table C6: Snow Dome Trip Profile

Time Period	Movement Profile				Trip Profile - People				Trip Profile - Vehicles 44%*			
	Friday		Saturday		Friday		Saturday		Friday		Saturday	
	Arrivals	Departures	Arrivals	Departures	Arrivals	Departures	Arrivals	Departures	Arrivals	Departures	Arrivals	Departures
08:00	2%	0%	2%	0%	42	0	85	0	18	0	37	0
09:00	6%	0%	2%	0%	162	0	99	0	71	0	43	0
10:00	4%	2%	7%	2%	99	42	369	85	43	19	161	37
11:00	12%	6%	6%	2%	345	163	348	99	150	71	151	43
12:00	4%	4%	9%	7%	113	99	468	369	49	43	204	161
13:00	6%	12%	10%	6%	169	347	561	348	74	151	244	151
14:00	7%	4%	11%	9%	190	113	610	468	83	49	266	204
15:00	3%	6%	13%	10%	85	170	717	561	37	74	312	244
16:00	11%	7%	11%	11%	296	191	582	610	129	83	253	266
17:00	7%	3%	9%	13%	204	85	475	717	89	37	207	312
18:00	0%	11%	0%	11%	0	297	0	582	0	130	0	253
19:00	25%	7%	14%	9%	698	205	766	475	304	89	334	207
20:00	12%	0%	4%	0%	345	0	206	0	150	0	90	0
21:00	3%	25%	2%	14%	70	701	85	766	31	305	37	334
22:00	0%	12%	0%	4%	0	333	0	206	0	145	0	90
23:00	0%	3%	0%	2%	0	71	0	85	0	31	0	37
Total	100%	100%	100%	100%	2,819	2,819	5,371	5,371	1,227	1,227	2,339	2,339

*Source, NTS Average distance travelled by purpose and main mode: Great Britain, 2012 - Leisure Category Category

Table C7: Water Park Trip Profile

Time Period	Movement Profile				Trip Profile - People				Trip Profile - Vehicles 44%*			
	Friday		Saturday		Friday		Saturday		Friday		Saturday	
	Arrivals	Departures	Arrivals	Departures	Arrivals	Departures	Arrivals	Departures	Arrivals	Departures	Arrivals	Departures
08:00	2%	0%	2%	0%	20	0	38	0	9	0	17	0
09:00	6%	0%	2%	0%	76	0	45	0	33	0	19	0
10:00	4%	2%	7%	2%	46	20	165	38	20	9	72	17
11:00	12%	6%	6%	2%	162	76	156	45	70	33	68	19
12:00	4%	4%	9%	7%	53	46	210	165	23	20	91	72
13:00	6%	12%	10%	6%	79	163	251	156	35	71	109	68
14:00	7%	4%	11%	9%	89	53	273	210	39	23	119	91
15:00	3%	6%	13%	10%	40	80	321	251	17	35	140	109
16:00	11%	7%	11%	11%	139	90	261	273	60	39	114	119
17:00	7%	3%	9%	13%	96	40	213	321	42	17	93	140
18:00	0%	11%	0%	11%	0	139	0	261	0	61	0	114
19:00	25%	7%	14%	9%	327	96	343	213	142	42	150	93
20:00	12%	0%	4%	0%	162	0	92	0	70	0	40	0
21:00	3%	25%	2%	14%	33	329	38	343	14	143	17	150
22:00	0%	12%	0%	4%	0	156	0	92	0	68	0	40
23:00	0%	3%	0%	2%	0	33	0	38	0	14	0	17
Total	100%	100%	100%	100%	1,321	1,321	2,407	2,407	575	575	1,048	1,048

*Source, NTS Average distance travelled by purpose and main mode: Great Britain, 2012 - Leisure Category Category

Table C8: Activity Centre Trip Profile

Time Period	Movement Profile				Trip Profile - People				Trip Profile - Vehicles 44%*			
	Friday		Saturday		Friday		Saturday		Friday		Saturday	
	Arrivals	Departures	Arrivals	Departures	Arrivals	Departures	Arrivals	Departures	Arrivals	Departures	Arrivals	Departures
08:00	2%	0%	2%	0%	6	0	11	0	2	0	5	0
09:00	6%	0%	2%	0%	21	0	13	0	9	0	5	0
10:00	4%	2%	7%	2%	13	6	47	11	6	2	20	5
11:00	12%	6%	6%	2%	46	22	44	13	20	9	19	5
12:00	4%	4%	9%	7%	15	13	59	47	6	6	26	20
13:00	6%	12%	10%	6%	22	46	71	44	10	20	31	19
14:00	7%	4%	11%	9%	25	15	77	59	11	7	34	26
15:00	3%	6%	13%	10%	11	22	91	71	5	10	39	31
16:00	11%	7%	11%	11%	39	25	74	77	17	11	32	34
17:00	7%	3%	9%	13%	27	11	60	91	12	5	26	39
18:00	0%	11%	0%	11%	0	39	0	74	0	17	0	32
19:00	25%	7%	14%	9%	92	27	97	60	40	12	42	26
20:00	12%	0%	4%	0%	46	0	26	0	20	0	11	0
21:00	3%	25%	2%	14%	9	93	11	97	4	40	5	42
22:00	0%	12%	0%	4%	0	44	0	26	0	19	0	11
23:00	0%	3%	0%	2%	0	9	0	11	0	4	0	5
Total	100%	100%	100%	100%	373	373	679	679	162	162	296	296

*Source, NTS Average distance travelled by purpose and main mode: Great Britain, 2012 - Leisure Category Category

Table C9: Site-wide Trip Profile

Time Period	Trip Profile - People				Trip Profile - Vehicles 44%**			
	Friday		Saturday		Friday		Saturday	
	Arrivals	Departures	Arrivals	Departures	Arrivals	Departures	Arrivals	Departures
08:00	68	0	134	0	29	0	58	0
09:00	260	0	156	0	113	0	68	0
10:00	158	68	581	134	69	30	253	58
11:00	553	261	547	156	241	114	238	68
12:00	181	159	737	581	79	69	321	253
13:00	271	556	883	547	118	242	384	238
14:00	305	181	961	737	133	79	418	321
15:00	135	272	1,128	883	59	118	491	384
16:00	474	306	916	961	206	133	399	418
17:00	327	136	749	1,128	142	59	326	491
18:00	0	476	0	916	0	207	0	399
19:00	1,117	329	1,207	749	486	143	525	326
20:00	553	0	324	0	241	0	141	0
21:00	113	1,123	134	1,207	49	489	58	525
22:00	0	533	0	324	0	232	0	141
23:00	0	113	0	134	0	49	0	58
Total	4,513	4,513	8,458	8,458	1,965	1,965	3,682	3,682

Table C10: Site-wide Car Park Accumulation (Vehicles)

Time of Day	Weekday			Saturday		
	Arrivals	Departures	Car Park Capacity	Arrivals	Departures	Car Park Capacity
08:00	29	0	29	58	0	58
09:00	113	0	142	68	0	126
10:00	69	30	182	253	58	321
11:00	241	114	309	238	68	491
12:00	79	69	318	321	253	559
13:00	118	242	194	384	238	705
14:00	133	79	248	418	321	803
15:00	59	118	188	491	384	910
16:00	206	133	261	399	418	890
17:00	142	59	345	326	491	725
18:00	0	207	137	0	399	326
19:00	486	143	480	525	326	525
20:00	241	0	721	141	0	666
21:00	49	489	281	58	525	199
22:00	0	232	49	0	141	58
23:00	0	49	0	0	58	0

Table C11: Site-wide Car Park Accumulation - Cross Visitation Factor (Vehicles)

Time of Day	Weekday			Saturday		
	Arrivals	Departures	Car Park Capacity	Arrivals	Departures	Car Park Capacity
08:00	25	0	25	50	0	50
09:00	96	0	121	58	0	108
10:00	58	25	154	215	50	273
11:00	205	97	262	203	58	418
12:00	67	59	271	273	215	476
13:00	100	206	165	327	203	600
14:00	113	67	211	356	273	682
15:00	50	101	160	418	327	773
16:00	175	113	222	339	356	757
17:00	121	50	293	277	418	616
18:00	0	176	117	0	339	277
19:00	413	122	408	447	277	447
20:00	205	0	613	120	0	566
21:00	42	415	239	50	447	170
22:00	0	197	42	0	120	50
23:00	0	42	0	0	50	0

Table C12: Site-wide Car Park Accumulation - Spare Capacity (Vehicles)

Time of Day	Weekday			Saturday		
	Car Park Capacity	%	Residual Spaces	Car Park Capacity	%	Residual Spaces
08:00	25	3%	805	50	6%	780
09:00	121	15%	709	108	13%	722
10:00	154	19%	676	273	33%	557
11:00	262	32%	568	418	50%	412
12:00	271	33%	559	476	57%	354
13:00	165	20%	665	600	72%	230
14:00	211	25%	619	682	82%	148
15:00	160	19%	670	773	93%	57
16:00	222	27%	608	757	91%	73
17:00	293	35%	537	616	74%	214
18:00	117	14%	713	277	33%	553
19:00	408	49%	422	447	54%	383
20:00	613	74%	217	566	68%	264
21:00	239	29%	591	170	20%	660
22:00	42	5%	788	50	6%	780
23:00	0	0%	830	0	0%	830