APPENDIX 13.2
Traffic Noise Assessment

TRAFFIC NOISE ASSESSMENT

1.1 Operational Traffic Noise Assessment

Assessment time: 16hr daytime

Assessment Locations:

Newly constructed main site entrance at junction with A48

Entrance to Science Park at Technology Drive.

Table 1 Predicted increase in traffic flow due to the development

		A48/Site Junction			Technology Drive		
		Saturday	Sunday	Weekday	Saturday	Sunday	Weekday
ATC Traffic Flows							
1	24hr Total 2009	21443	18783	24505	9323	8936	8971
2	16hr Total 2009	20336	17846	23098	8981	8562	8685
3	16hr Total 2012 (baseline)	21190	18596	24068	9358	8922	9050
4	16hr Total 2027 (assessment year)	24199	21236	27486	10687	10189	10335
Generated Traffic Flows							
5	Leisure	4478	4478	4478	0	0	0
6	Science Park	0	0	963	0	0	2076
7	Park and Ride	0	0	0	72	72	72
8	Total Development	4478	4478	5441	72	72	2148
9	Increase over 2012 baseline %	21	24	23	1	1	24
10	Increase over 2027 assessment year %	19	21	20	1	1	21

Notes for Table 1

1. A48/Site Junction - figures used are from ATC142.
   Technology Drive - figures used are from ATC110.

It is assumed that these figures represent the traffic flow at each of the assessment locations.

2. The traffic flow figures for the daytime period 07:00 - 23:00.

3. A traffic growth factor of 1.042 has been applied to the current figures to forecast the flows in the year of opening in 2012. These are the baseline traffic flow figures to be used in the impact assessment. (Source: NRTF and TEMpro).

4. A traffic growth factor of 1.142 has been applied to the baseline figures to forecast the flows in the future assessment year, 2027. These are the baseline traffic flow figures to be used in the impact assessment. (Source: NRTF and TEMpro).

5. Using TRICS data supplied by OPUS, hourly traffic flows for each of the leisure facilities have been calculated. It is assumed that all traffic generated by the leisure facilities will use the main site entrance off the A48.

6. It has been proposed by OPUS that 31.7% of newly generated traffic to the Science Park will redirect through the main entrance off the A48. The remainder will use the entrance at Technology Drive. It is assumed that the Science Park will not be operational on weekends.

7. There will be a daily total of 72 new bus journeys associated with the Park and Ride operation. It is assumed that these journeys will be via Technology Drive only.

8. Total traffic flows generated by the proposed development.

9. Increased traffic flow over baseline year figures expressed as a percentage.

10. Increased traffic flow over assessment year figures expressed as a percentage.

1.1.1 It is proposed that the site becomes operational in 2012 and will be accessed via a new signal controlled junction on the A48.

1.1.2 The proposed development is scheduled to open in 2012. Traffic flows have been provided that reflect predicted levels in 2012 and 2027.

1.1.3 Once the development is open, it is assumed that some of the traffic that currently uses Technology Drive to access the science park will redirect through the main site entrance off the A48. This has also been considered in the assessment.

1.2 Calculations

							A48/Site				Technology Drive		
		TRICS				ATC 142 2009					ATC 110		
Hour	Leisure Trips	Science Park Trips	Total			Saturday	Sunday	Weekday			Saturday	Sunday	Weekday
00:00	0	0	0			183	191	91			88	105	40
01:00	0	0	0			107	115	50			52	72	18
02:00	0	0	0			68	77	38			33	48	10
03:00	0	0	0			62	63	45			31	37	12
04:00	0	0	0			67	64	75			25	31	17
05:00	0	0	0			263	239	404			34	26	43
06:00	18	0	18			358	189	705			81	55	145
07:00	98	201	299			471	261	1487			161	90	377
08:00	258	472	730			792	386	1790			299	161	582
09:00	289	301	590			1154	806	1359			449	348	546
10:00	250	159	409			1508	1409	1292			616	579	536
11:00	277	145	422			1764	1713	1405			739	682	582
12:00	272	264	536			1911	1815	1519			795	792	628
13:00	282	287	569			1850	1734	1593			795	814	629
14:00	257	186	443			1761	1704	1630			782	822	653
15:00	356	176	532			1669	1661	1883			757	831	663
16:00	413	287	700			1627	1453	2062			740	785	713
17:00	447	380	827			1609	1359	2135			699	684	692
18:00	395	181	576			1346	1181	1645			627	622	623
19:00	367	0	367			980	831	1163			509	491	511
20:00	265	0	265			682	629	796			369	368	381
21:00	156	0	156			548	456	619			270	256	277
22:00	78	0	78			384	288	499			207	157	186
23:00	0	0	0			281	162	222			165	80	108
Total	4478	3039	7517		24hr Total 2009	21443	18783	24505		24hr Total 2009	9323	8936	8971
Redirect %	31.7				16hr Total 2009	20336	17846	23098		16hr Total 2009	8981	8562	8685
Growth Factor (2012)	1.042				16hr Total 2012 (baseline)	21190	18596	24068		16hr Total 2012 (baseline)	9358	8922	9050
Growth Factor (2012 - 2027)	1.142				16hr Total 2027 (assessment year)	24199	21236	27486		16hr Total 2027 (assessment year)	10687	10189	10335
					Leisure	4478	4478	4478		Leisure	0	0	0
					Science Park (redirected)	0	0	963		Science Park (less redirected)	0	0	2076
					Total Development Flow	4478	4478	5441		Park and Ride (PCU)	72	72	72
										Total Development Flow	72	72	2148
					2012 Increase Flow %	21	24	23		2012 Increase Flow %	1	1	24
					2027 Increase Flow %	19	21	20		2027 Increase Flow %	1	1	21

1.2.1 A proportion of traffic will redirect through the main entrance to access the Science Park during weekdays

1.2.2 The science park does not operate on weekends

1.2.3 The trip rates for the leisure activities on weekends are the same as for during the week

1.2.4 Existing ATC data has been grown to reflect anticipated flows in the year of opening ie 2012

1.2.5 Committed developments have not been considered

1.3 Match Day Traffic Noise Assessment

Assessment: Normal operation (including matchdays).

Assessment time: 1 hour pre and post match (Saturday and Sunday only).

Assessment Locations:

Newly constructed main site entrance at junction with A48.

Entrance to Science Park at Technology Drive.

Saturday Kick-Off: 18:00 hrs

Sunday Kick-Off: 19:00 hrs

Match Duration: 2 hrs

Table 1 Predicted increase in traffic flow during the hour before kick-off

		A48/Site Junction		**Technology Drive**	
		Saturday	Sunday	Saturday	Sunday
ATC Traffic Flows					
1	Pre Match Hour	1609	1181	699	622
2	Total 2012 (baseline)	1677	1230	728	648
3	Total 2027 (assessment year)	1915	1405	832	740
Generated Traffic Flows					
4	Leisure	447	395	0	0
5	Matchday Vehicles	1000	1000	240	240
6	Total Development Flow	1447	1395	240	240
7	Increase over 2012 baseline %	86	113	33	37
8	Increase over 2027 assessment year %	76	99	29	32

Table 2 Predicted increase in traffic flow during the hour following the match

		A48/Site Junction		Technology Drive	
		Saturday	Sunday	Saturday	Sunday
ATC Traffic Flows					
1	Post Match Hour	682	1405	270	256
2	Total 2012 (baseline)	711	1464	282	266
3	Total 2027 (assessment year)	812	1672	322	304
Generated Traffic Flows					
4	Leisure	265	0	0	0
5	Matchday Vehicles	1000	1000	240	240
6	Total Development Flow	1265	1000	240	240
7	Increase over 2012 baseline %	178	68	85	90
8	Increase over 2027 assessment year %	156	60	75	79

Notes:

1. A48/Site Junction - figures used are from ATC142.
   Technology Drive - figures used are from ATC110.
   It is assumed that these figures represent the current traffic flows at each of the assessment locations.

2. A traffic growth factor of 1.042 has been applied to the current figures to forecast the flows in the year of opening in 2012. These are the baseline traffic flow figures to be used in the baseline impact assessment. (Source: NRTF and TEMpro).

3. A traffic growth factor of 1.142 has been applied to the baseline figures to forecast the flows in the future assessment year, 2027. These are the traffic flow figures to be used in the future impact assessment. (Source: NRTF and TEMpro).

4. Using TRICS data supplied by OPUS, traffic flows for the hour of interest from the leisure facilities have been calculated. It is assumed that all traffic generated by the leisure facilities will use the main site entrance off the A48.

5. It has been proposed by OPUS that 1000 cars will access the stadium through the main entrance off the A48. All matchday coaches and shuttles will access the stadium via Technology Drive. It is assumed that the Science Park will not be operational at match times.

6. Total traffic flows generated by the proposed development associated with the match.

7. Increased traffic flow over baseline year figures expressed as a percentage.

8. Increased traffic flow over future year figures expressed as a percentage.

1.3.1 It is assumed that all traffic associated with the match will arrive in the hour preceding kick-off.

1.3.2 It is assumed that all traffic associated with the match will depart during the hour following the match.

1.3.3 The assessment has been made assuming a capacity crowd at the Celtic Crusaders Stadium.

1.3.4 It is assumed that matches will take place on a Saturday or Sunday evening.

1.4 Calculations

						A48/Site				Technology Drive	
		TRICS				ATC 142 2009				ATC 110	
Hour	Leisure Trips	Science Park Trips	Total			Saturday	Sunday			Saturday	Sunday
00:00	0	0	0			183	191			88	105
01:00	0	0	0			107	115			52	72
02:00	0	0	0			68	77			33	48
03:00	0	0	0			62	63			31	37
04:00	0	0	0			67	64			25	31
05:00	0	0	0			263	239			34	26
06:00	18	0	18			358	189			81	55
07:00	98	201	299			471	261			161	90
08:00	258	472	730			792	386			299	161
09:00	289	301	590			1154	806			449	348
10:00	250	159	409			1508	1409			616	579
11:00	277	145	422			1764	1713			739	682
12:00	272	264	536			1911	1815			795	792
13:00	282	287	569			1850	1734			795	814
14:00	257	186	443			1761	1704			782	822
15:00	356	176	532			1669	1661			757	831
16:00	413	287	700			1627	1453			740	785
17:00	447	380	827			1609	1359			699	684
18:00	395	181	576			1346	1181			627	622
19:00	367	0	367			980	831			509	491
20:00	265	0	265			682	629			369	368
21:00	156	0	156			548	456			270	256
22:00	78	0	78			384	288			207	157
23:00	0	0	0			281	162			165	80
Total	4478	3039	7517		24hr Total 2009	21443	18783		24hr Total 2009	9323	8936
Redirect %	0				Pre Match Hour	1609	1181		Pre Match Hour	699	622
Growth Factor (2012)	1.042				Total 2012 (baseline)	1677	1230		Total 2012 (baseline)	728	648
Growth Factor (2012 - 2027)	1.142				Total 2027 (assessment year)	1915	1405		Total 2027 (assessment year)	832	740
					Leisure	447	395		Leisure	0	0
					Matchday Vehicles (cars)	1000	1000		Coaches+Shuttles	240	240
					Total Development Flow	1447	1395		Total Development Flow	240	240
					2012 Increase Flow %	86	113		2012 Increase Flow %	33	37
					2027 Increase Flow %	76	99		2027 Increase Flow %	29	32
					Post Match Hour	682	1405		Post Match Hour	270	256
					Total 2012 (baseline)	711	1464		Total 2012 (baseline)	282	266
					Total 2027 (assessment year)	812	1672		Total 2027 (assessment year)	322	304
					Leisure	265	0		Leisure	0	0
					Matchday Vehicles (cars)	1000	1000		Coaches+Shuttles	240	240
					Total Development Flow	1265	1000		Total Development Flow	240	240
					2012 Increase Flow %	178	68		2012 Increase Flow %	85	90
					2027 Increase Flow %	156	60		2027 Increase Flow %	75	79

1.4.1 Only evening weekend games have been considered as this represents the greatest impact and is typical of the current fixture list

1.4.2 Pre, post and during the match normal activity levels are assumed for the rest of the development

1.4.3 Existing ATC data has been grown to reflect anticipated flows in the year of opening ie 2012

1.4.4 Committed developments have not been considered