5.8 Mitigation Measures & Monitoring

Construction Phase & Operational Phase

5.8.1 In order to minimise the traffic impact resulting from the proposed Civic Amenity Site at Labre Park a number of measures can and will be adopted as follows:

- Promoting the deposit of civic amenity waste to private vehicles only (i.e. mainly cars and cars with trailers);
- Providing a large number of parking bays on the site with a logical sequence of waste receptacles;
- Ensuring all vehicles accessing the site are appropriately sealed and covered;
- Installing appropriate and efficient pay stations on the site;
- Ensuring the site is always appropriately manned;
- Installing adequate signage and notice boards on the site;
- Providing adequate lighting on the site;
- Installing adequate signage from the main road network to the site;
- Improving Road marking and signage on the junctions with Killeen Road and Kylemore Road to assist junction discipline e.g. marking two lanes on the approach to the stop lines on the minor junction arms and road markings for a right turn on the mainline. Traffic currently stacks in this manner and there is sufficient width for two lanes on the approaches to stop lines.

5.9 Residual Impact

5.9.1 Section 5.6 has outlined in detail the expected environmental impact of the proposed facility. The implementation of the proposed mitigation measures will ensure that there is no significant environment impact as a result of the proposed development.

5.9.2 During the construction stage, damage to surrounding roads by heavy vehicles can be problematic. Again, monitoring during the construction phase will be vital, to ensure that any unnecessary damage is identified at an early stage, and appropriate mitigation measures taken to counteract it.

5.9.3 In summary traffic movement associated with the proposed development will have minimal impact on the surrounding traffic environment. The overall residual impact of the scheme on the road network is likely to be minimal.

5.10 Alternatives Considered - Traffic

5.10.1 The main alternative access to the site would be to construct a new road link from the Labre Park residential access (junction with Kylemore Road) to the proposed site. This proposal would result in a greater environmental impact, as it would result in higher traffic flows traversing the residential street. This would result in a greater risk of conflict between vehicles and pedestrians/residents in the park, and would be likely to be unacceptable to the residents group.

5.11 Monitoring

5.11.1 No additional post-development monitoring will be necessary with this development. As part of its governing role over the highway infrastructure, Dublin City Council will be monitoring the performance of the junctions detailed within this report as part of its cyclic maintenance regime for the area.

5.12 Reinstatement

5.12.1 Care will be taken in integrating the new entrance to the existing termination point of Kylemore Park West, to provide a seamless road pavement between the new facility and the existing road.

6.0 NOISE AND VIBRATION

6.1 Introduction

6.1.1 The environmental noise impact of the proposed Civic Amenity (CA) Facility at Labre Park, Ballyfermot, is assessed. The potential noise impacts during the construction phase and during the operational phase are considered.

6.1.2 During the construction phase, the potential noise impacts are associated with site preparation and surfacing.

6.1.3 During the operational phase, the main potential for noise impact is due to traffic movements, and noise generated within the facility when materials are deposited in the various recycling bins and areas.

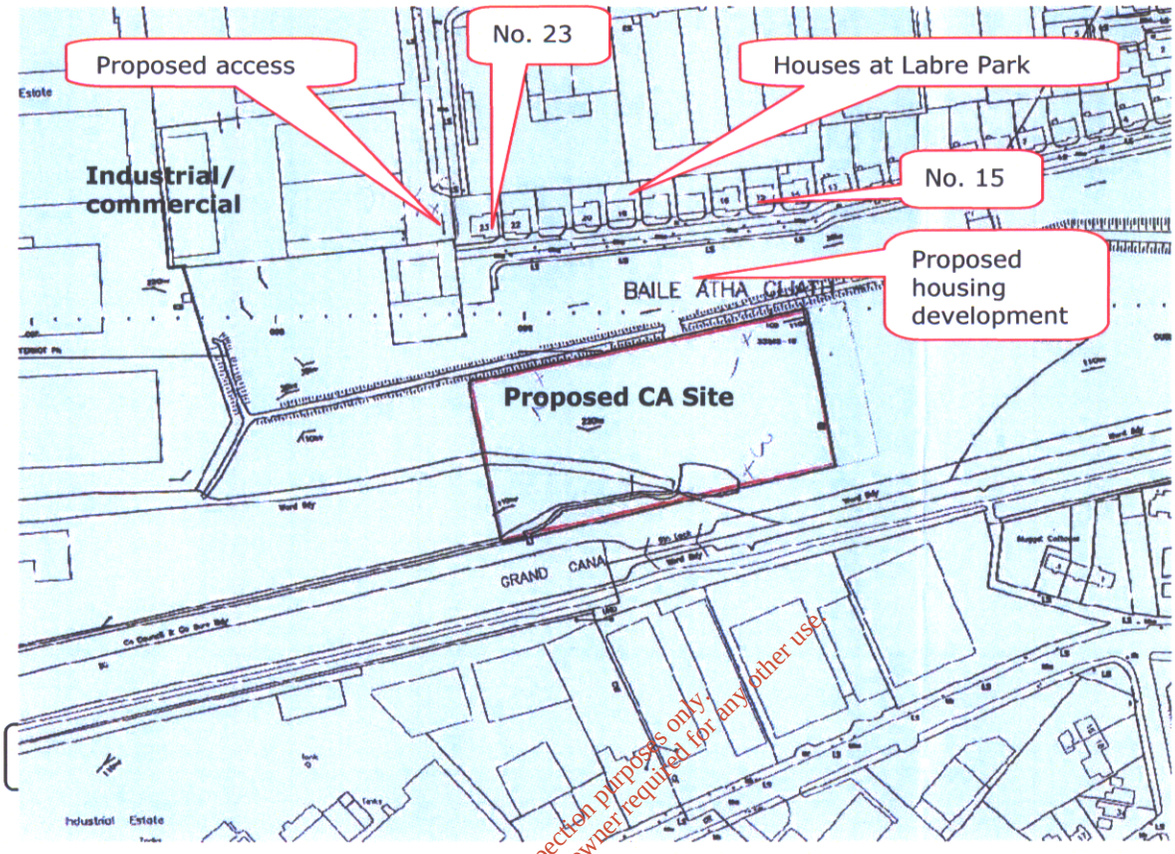
6.2 Noise Sensitive Locations

6.2.1 The proposed site is located in a mixed residential and industrial /commercial area. The noise sensitive locations where greatest impact will be felt presently, are the houses in Labre Park, which are between 40 and 50m north of the site boundary.

6.2.2 A new housing development is planned at the site between Labre Park and the northern boundary of the proposed civic amenity area. These houses will be the nearest noise sensitive locations to the site, and will be within 15 m of the site boundary.

6.2.3 The noise sensitive locations are illustrated in Figure 6.1

Figure 6.1. Location of proposed civic amenity development and noise sensitive locations



date	project	client
Jan 2005	Labre Park EIS	Dublin City Council

6.3 Methodology

6.3.1 The survey methodology and assessment procedures were in accordance with the relevant standards, legislation and guidelines as detailed below:

Standards, Guidelines, and Statutory Regulations

- ISO 1996 "Description and measurement of environmental noise"
- ISO 9613 "Attenuation of sound during propagation outdoors"
- BS 4142 "Rating industrial noise affecting mixed residential and industrial areas"
- Environmental Protection Agency Act, 1992
- Environmental Protection Agency Act, 1992 (Noise) Regulations, 1994.
- Protection of the Environment Act 2003
- Environmental Noise Survey Guidance Document, EPA, 2003
- Integrated Pollution Control Licensing Guidance Note on Noise in Relation to Scheduled Activities

6.3.2 A summary of noise terminology used in this report is given in Appendix A. All noise levels in this report are in terms of the L_{Aeq} parameter (time-averaged noise) unless otherwise stated.

6.4 Assessment Criteria

6.4.1 The noise impact is assessed with reference to absolute noise level criteria, and also by considering the change in noise environment brought about by the development.

6.4.2 In assessing the impact, reference is made to Environmental Protection Agency (EPA) guideline noise limits of 55 dB(A) by day at the noise sensitive locations. The assessment of the change in noise environment is made according to British Standard BS 4142 "Rating industrial noise affecting mixed residential and industrial areas".

Calculations

6.4.3 Noise propagation calculations for the operational phase were carried out in accordance with ISO 9613 "Attenuation of sound during propagation outdoors", based on measured noise emission data at other civic amenity facilities. Noise calculations for the construction phase were carried out in accordance with BS 5228 "Noise control on open and construction sites".

6.5 Baseline Survey at Proposed Site

6.5.1 A baseline noise survey was carried out at the proposed site on 20th October 2004.

6.5.2 Due to site security considerations, this survey was confined to short duration orientation measurements to determine the approximate character and level of the existing noise environment.

6.5.3 The measurement results are presented in Table 6.1.

Existing Noise Environment

6.5.4 The noise environment at the site, and at the adjacent houses at Labre Park, is determined by traffic noise from Kylemore road, and other distant traffic noise. The ambient noise level was relatively constant throughout the site, and was in the region of 52 dB(A) L_{Aeq}. This is a moderate noise environment for an urban area, and is typical of the prevailing level of distant traffic noise in the Dublin area.

Noise Surveys at Other Civic Amenity Facilities

6.5.5 Noise surveys were carried out at other operating civic amenity facilities, to determine the range of typical noise emissions. The results of these surveys are shown in Table 6.2. This noise emission data was used to calculate the range of noise levels to be expected at the proposed Labre Park facility.

Shamrock Terrace North Strand (see Table 6.2)

6.5.6 During the survey at this facility there was waste material being deposited at the facility, and also a significant level of noise associated with waste skips being loaded onto trucks and hauled away. The activity noise level measured at 20m was 69 dB(A) L_{Aeq}. This level of noise emission could be expected on occasions from the Labre Park facility when skips are being collected from the site, or other heavy vehicles are operating within the site.

Ennis Waste Recycling Centre, Gort Road Industrial Estate (see Table 6.2)

6.5.7 This centre is used by the public for depositing household recyclable wastes. During the survey, there was continuous activity at the recycling centre. Noise levels generated were relatively low when items were being deposited into receptacles. The measured activity noise level at 20m was 50 dB(A) L_{Aeq}.

Central Waste Management Facility, Inagh, Co Clare (see Table 6.2)

6.5.8 The Inagh site is a large landfill site, which serves County Clare. It includes a comprehensive waste recycling/recovery area, with facility for accepting scrap metal, bulky goods, household recyclables, priority waste, construction/demolition waste, and white goods. There was continuous activity during the survey, and the measured activity noise level at 30m was 56 dB(A) L_{Aeq}.

Table 6.1: Existing noise levels at proposed Labre Park Civic Amenity

Location	Time	Measured Noise Level dB (A)			Audible sounds/ Comments
		L_{Aeq}	L_{A90}	L_{A10}	
Northeast corner of site	11.44	52	50	53	Distant traffic noise
Northwest corner of site	11.50	52	49	53	
Southeast corner of site	12.16	51	42	53	
Southwest corner of site	13:16	52	-	-	Distant traffic noise. Statistics not measured
At proposed site entrance [1]	12:37	58	51	61	Truck movements at nearby industrial unit. Distant traffic noise

[1]end of Kylemore Park West, adjacent to no. 23 Labre Park

Instrumentation: Norsonic 116, calibrated with Norsonic 1251
Personnel: Ross Whyatt B.Sc. ANV Technology
Weather: dry, light breeze
Parameters:
L_{Aeq}: average noise level
L_{A90} : noise level exceeded for 90% of time (steady background noise)
L_{A10}: noise level exceeded for 10% of time - higher noise events

Table 6.2: Noise measurements at existing Civic Amenity Facilities

Location	Measured Noise Level dB (A)			Audible sounds/Comments
	L_{Aeq}	L_{A90}	L_{A10}	
Shamrock Tce CA North Strand March 2004 10.30-11.30	69	51	64	Measured at 20m. Cars and occasional trucks entering and leaving site. Unloading of recyclables from vehicles and segregating these to respective areas, banging of metal and glass most noticeable. Removal of large skips contributes highest noise levels Note L_{Aeq} is greater than L_{A10}, due to occasional high impact noise
Ennis CA 04/12/04	50	45	52	Measured at 20m. Car movements, noise from materials being deposited in recycling bins
Inagh, Co. Clare CA 04/12/04	56	42	57	Measured at 30m. Car and truck movements, noise from materials being dropped into skips in lower level yard (drop approx 2m)

6.6 Assessment Criteria for Construction Phase

6.6.1 There are no mandatory noise limits for construction noise in Ireland or in the UK. In setting criteria for construction noise, account has to be taken of the technical feasibility of the proposed criterion. Another factor is the delay that may be incurred due to implementation of noise control measures and the consequent trade-off between the noise level, and the duration of the noise exposure.

6.6.2 The National Roads Authority has published construction noise limits in "Guidelines for the Treatment of Noise and Vibration in National Roads Schemes". These limits, which are presented in Table 6.3, represent a reasonable compromise between the practical limitations in a construction project, and the need to ensure an acceptable ambient noise level for the residents and nearby sensitive areas. While they have been developed for roads projects, it is also considered reasonable to apply them for other construction projects, as the limits are similar to typical construction noise project limits that have been used previously in Ireland.

Table 6.3: Maximum permissible noise levels at the façade of dwellings during construction. Source: "Guidelines for the Treatment of Noise & Vibration in National Road Schemes", NRA, 2004

Days & Times	$L_{Aeq\ (1hr)}$ dB	L_{Amax} dB
Monday to Friday, 07.00 to 19.00	70	80
Monday to Friday, 19.00 to 22.00	60	65
Saturday, 08.00 to 16.30	65	75
Sundays and Bank Holidays, 08.00 to 16.30	60	65

6.7 Assessment Criteria For Operational Phase

6.7.1 The noise impact of the proposed development at houses is analysed with reference to EPA guideline noise limits, and British Standard BS 4142.

Consideration of EPA Guideline Noise Limits

6.7.2 EPA guideline noise limits at noise sensitive locations are 55 dB(A) during daytime.

6.7.3 A fundamental requirement for a development is that it should not exceed the EPA limit. This does not however mean that this is an acceptable impact, as account has also to be taken of the nature of the development, and the existing noise environment. In certain situations where the existing ambient noise level is low, the EPA guideline may not be appropriate.

Consideration of BS4142 Criteria

6.7.4 In BS 4142 "Rating industrial noise affecting mixed Residential and Industrial Areas", the predicted noise levels (L_{Aeq}) associated with the new noise sources are compared with the underlying "background noise" at the assessment location. The underlying background noise level is defined in the standard to be the L_{A90} value, which is the steady component of the ambient noise, and essentially represents the noise minima at the assessment location.

6.7.5 According to BS 4142, if the specific noise from the new noise source exceeds the underlying background noise, then the industrial noise is likely to be noticeable, and the potential for annoyance needs to be assessed. The probability of complaints depends on the degree of exceedence of the background noise. A difference of +10dB indicates that complaints are likely. A difference of +5dB is considered to be of marginal significance.

6.7.6 The existing background noise measured at the northern boundary of the site adjacent to Labre Park was found to be 49 to 50 dB(A) L_{A90}.

6.7.7 The BS 4142 assessment would therefore indicate that a new noise source not exceeding 54 dB(A) L_{Aeq} (49 + 5) would be of marginal significance, and that complaints would be likely at noise levels of 59 dB(A) L_{A90} (49 +10).

Proposed Assessment Criterion

6.7.8 Taking account of the EPA guideline noise limit, and the considerations of BS 4142, an assessment criterion of 53 dB(A) L_{Aeq} is considered to be reasonable for the proposed development at this site. This level of noise is unlikely to be noticeable in the existing ambient traffic noise level of 52 dB(A) L_{Aeq}.

6.8 Noise Impact Assessment

6.8.1 The noise impact is considered during the construction and operational phase at the following noise sensitive receptors:

- Lands adjacent to northern boundary (site of proposed new housing)
- No. 15 Labre Park – this is the nearest existing house to the site
- No. 23 Labre Park – this house is adjacent to the proposed entrance to the facility, and will be subject to additional traffic noise.

Noise Propagation Model (ISO 9613)

6.8.2 Noise propagation calculations for the construction phase, and for the completed development were made using a computer model (IMMI 5.2) in accordance with BS 5228 and ISO 9613.

6.8.3 The noise model allows for attenuation due to distance, screening, ground absorption and atmospheric absorption.

6.8.4 The noise propagation from the Civic Amenity Facility was modelled based on measured activity noise levels as documented in Table 6.2. Within the civic amenity area, the noise sources were modelled as area sources, extending over the full area of the proposed civic amenity site. Traffic noise was modelled as line sources.

Predicted Noise Levels During Construction Phase

6.8.5 During the construction phase, the greatest potential for noise impact will be during the initial site preparation and surfacing. Construction noise levels will vary depending on the distance of the construction machinery from the locations in question.

6.8.6 Construction traffic movements for a project of this scale are unlikely to be significant. Calculations are based on nominal assumed truck movements of 8 per hour to/from the site.

6.8.7 Based on typical noise emissions in BS 5228, the resulting construction noise level was calculated at each of the noise sensitive receptors, and is presented in Table 6.4 For comparison purposes, the existing ambient noise levels at these locations are also shown in the table.

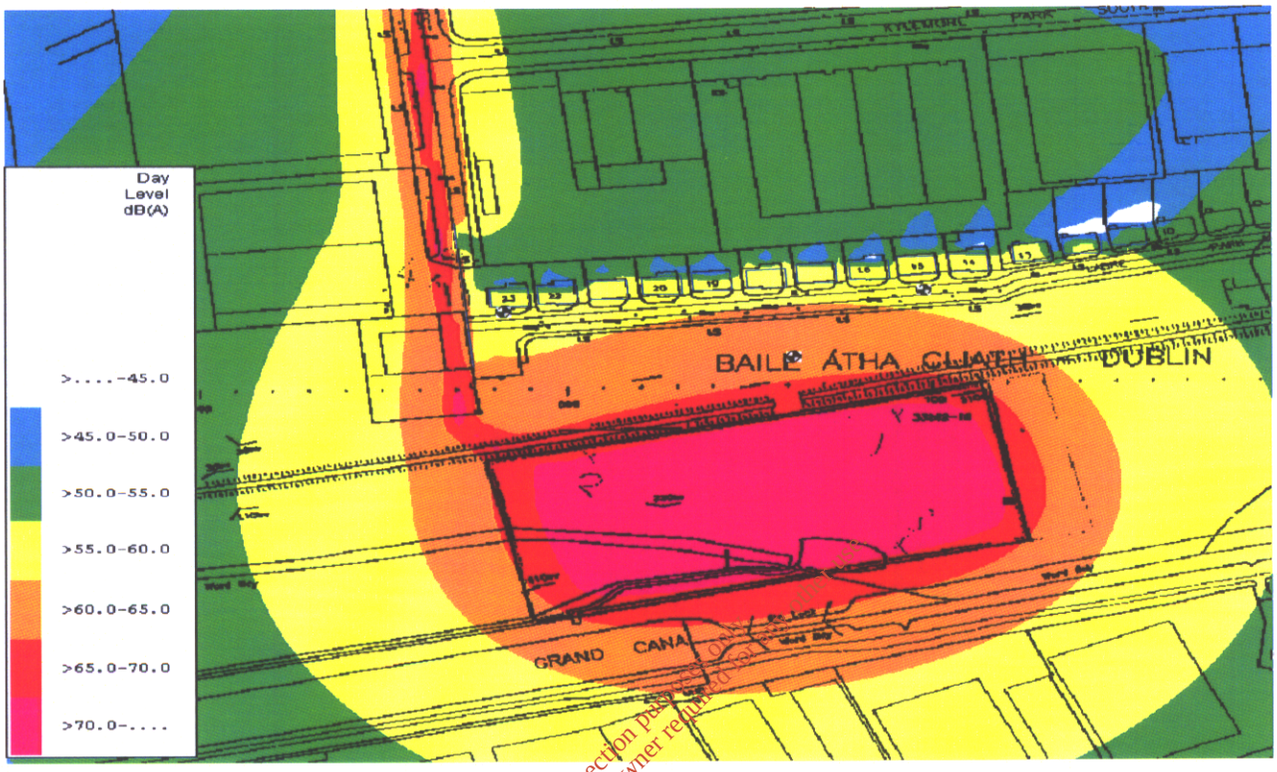
6.8.8 The predicted construction noise level at no. 23 Labre Park is 58 dB(A). The proposed housing north of the civic amenity site may not be completed during the construction phase. However, the noise level is predicted to be 63 dB(A) in the housing development lands. These construction noise levels will be audible above the existing ambient noise levels, but will be comfortably within the standard construction noise criterion of 70 dB(A) L_{Aeq}. The noise impact during the construction phase is slight. Furthermore, it is anticipated that the wall between the housing development and the proposed development will be constructed prior to the commencement of the major construction of the Civic Amenity site.

6.8.9 The predicted construction noise levels are presented as a noise map in Figure 6.2.

Table 6.4: Predicted construction noise levels, compared with existing ambient noise levels

Location	Calculated Construction Noise Level dB(A) L_{Aeq}	Existing Ambient Noise Level, dB(A) L_{Aeq}
Lands adjacent to northern boundary	63	51-52 dB(A)
No. 15 Labre Park	59	
No. 23 Labre Park Site entrance	58	

Figure 6.2: Calculated noise levels during construction phase (based on assumed sound power emission of 110 dB(A) L_{WA} from construction equipment, and 8 heavy vehicle movements per hour to/from site, calculated in accordance with BS 5228)



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Jan 2005	Labre Park EIS	Dublin City Council

Predicted Noise During Operational Phase

6.8.10 The predicted noise levels during the operational phase are presented in Table 6.5.

6.8.11 The noise emitted from the civic amenity area will be a combination of traffic noise, and noise generated by materials being deposited in the recycling containers, and vehicles within the site. The predictions are made for three scenarios:

- **Scenario 1:** Low noise activities – household waste recycling, modelled based on Ennis waste recycling centre.
- **Scenario 2:** Full capacity usage, household waste, bulky waste, construction/demolition waste, green waste: modelled based on Inagh Waste Management Facility, Co. Clare.
- **Scenario 3:** Highest expected noise emissions, when skips were being loaded and unloaded from trucks, modelled based on Shamrock Terrace data.

6.8.12 In all three scenarios, allowance is made for a nominal traffic flow of 20 light vehicles per hour, and 10 heavy vehicles per hour. As the measured data from the waste facilities surveyed also included a contribution from traffic noise, the inclusion of a separate contribution for traffic in the calculation model for Labre Park may result in double counting of the traffic noise, and may tend to overestimate the noise impact.

Table 6.5: Predicted noise levels due to proposed Civic Amenity Facility at Labre Park during operational phase (no mitigation)

Location	Calculated Operational Phase Noise, dB(A) L_{Aeq}		
	Scenario 1 Light usage	**Scenario 2 Full capacity usage**	**Scenario 3 Highest expected noise**
Lands adjacent to northern boundary	52	53	58
No. 15 Labre Park	48	49	54
No. 23 Labre Park Site entrance	51	52	54

6.9 Noise Impact Assessment

Construction Phase

6.9.1 While there would be an increase in noise level during the construction phase, the predicted increase will be less than 70dB(A), in conformance with criterion identified.

Operational Phase

6.9.2 During the operational phase, the predicted noise levels at the nearest houses, and at the proposed housing site, are in the range 48 to 58 dB(A) L_{Aeq}. When the facility is operating normally at full capacity, the typical expected noise levels at the sensitive locations are in the range 49 to 53 dB(A) L_{Aeq} (scenario 2 in Table 6.5). These predicted levels are within the assessment criterion of 53 dB(A), which is considered appropriate for this site. The noise would be audible at a low level in the existing ambient noise of 52 dB(A), but would not be intrusive, and the overall impact would be rated as slight.

6.9.3 However there will be occasions when higher noise levels will be generated, for example when skips are being loaded and off-loaded. The highest predicted noise level of 58 dB(A) (scenario 3 in Table 5) exceeds the proposed assessment criterion of 53 dB(A). The noise impact on these occasions would be rated at moderate.

6.10 Mitigation

Construction Phase

6.10.1 No special mitigation measures are likely to be required during the construction phase. In accordance with best practice, the noise issues at the site should be managed in accordance with the recommendations in BS 5228.

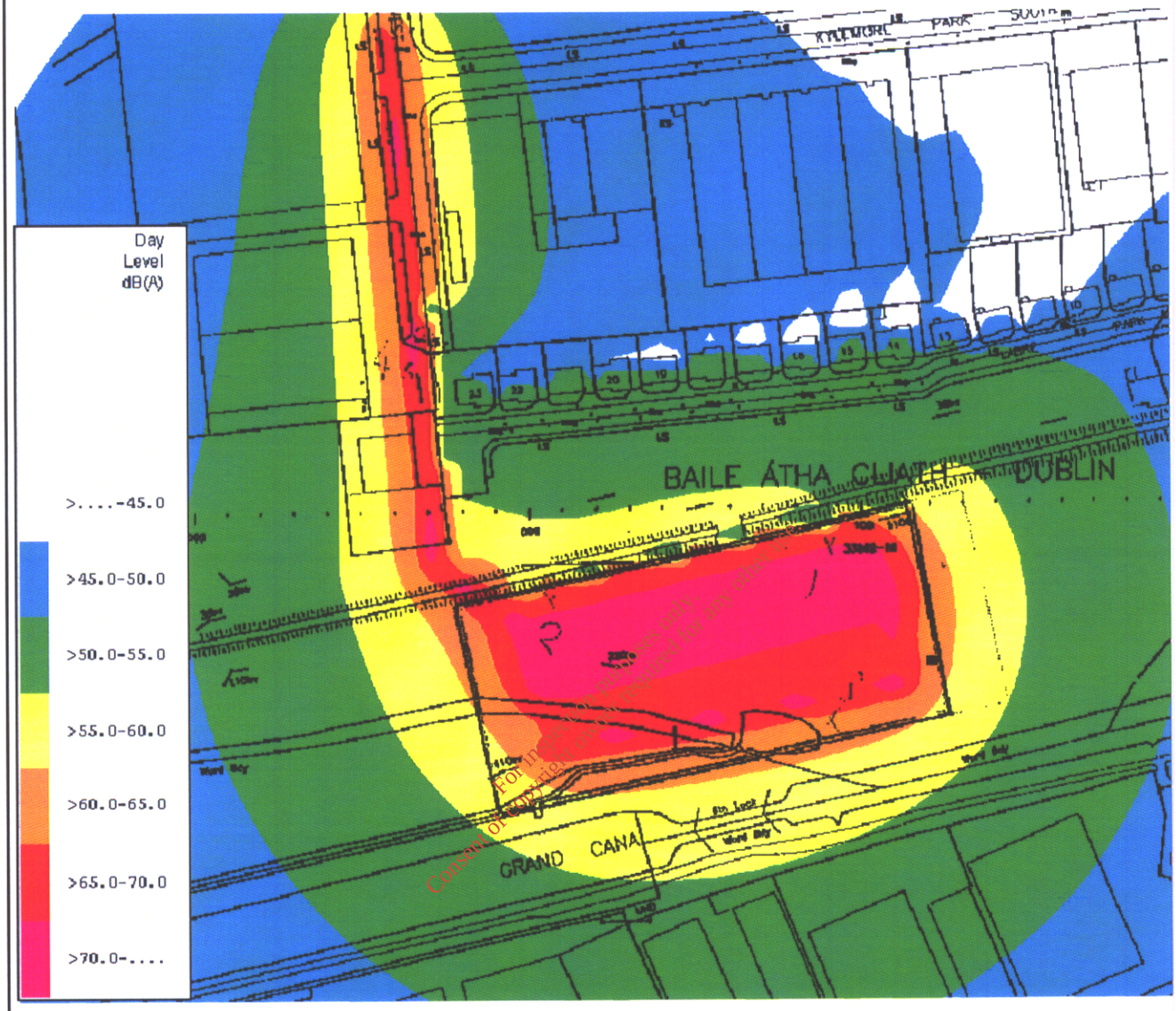
Operational Phase

6.10.2 During the operational phase, it is expected that in general the noise impact will be slight. However on occasions a moderate impact may be experienced. As a mitigation measure it is recommended that a noise barrier be erected along the northern boundary to screen the adjacent housing development lands at Labre Park.

6.10.3 The noise barrier (wall) should be of height 3m, and extend along the northern boundary of the site. The barrier will be in the form of a solid wall. This would ensure that the resulting noise level at the nearest house is 53 dB(A) L_{Aeq}.

6.10.4 The predicted noise levels with the wall in position are shown in Figure 6.6. This represents the highest noise scenario. In general operational noise levels are expected to be 2 to 5 dB lower.

Figure 6.3: Predicted operational phase noise levels, with a 3m wall to the rear of Labre Park Housing to act as a noise barrier at northern site boundary (highest noise simulation – scenario 3)



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6.11 Residual Noise Impact

6.11.1 With the noise barrier installed, the resulting noise levels at the nearest noise sensitive locations will be in the range 46 to 53 dB(A) L_{Aeq}. The noise will occasionally be audible at a low level. The noise impact is considered to be slight.

Table 6.6: Predicted operational phase noise levels, with noise barrier

Location	Calculated Operational Phase Noise, dB(A) L_{Aeq} with 3m boundary noise screen (wall) along northern boundary		
	Scenario 1 Light usage	**Scenario 2 Full capacity usage**	**Scenario 3 Highest expected noise**
Lands adjacent to northern boundary	48	49	53
No. 15 Labre Park	46	47	51
No. 23 Labre Park Site entrance	48	50	52

6.12 Summary

6.12.1 A baseline noise survey indicated that the existing noise environment at the Labre Park site is typical for an urban area exposed to distant traffic noise. The ambient noise level was approximately 52 dB(A) L_{Aeq}.

6.12.2 During the construction phase of the Civic Amenity Facility, the resulting noise levels will be comfortably within typical construction noise criteria, and minimal impact is anticipated.

6.12.3 Taking account of EPA guideline limits, and assessment procedures of BS 4142, an assessment/design criterion of 53 dB(A) L_{Aeq} is considered appropriate for the operational phase of the proposed development.

6.12.4 To ensure that noise impact is minimised during the operational phase it is recommended that a 3m high wall (noise barrier) be constructed along the northern boundary of the site, this will be facilitated by the construction of a wall to the rear of the proposed new housing development at Labre Park.

6.12.5 The calculated noise levels at the adjacent houses, and at the adjoining residential development lands are in the range 46 to 53 dB(A) L_{Aeq}. While this indicates that there may be a small increase in noise level the impact will be less than significant.

Appendix 6.1:

Noise Monitoring Terminology

date	project	client
Jan 2005	Labre Park EIS	Dublin City Council