An Bord Pleanála – Inspector's Report (Herhof Waste Facility, Balbriggan)

- Board Direction
- Order
- Inspector's Report – Sections relevant to Traffic

Ref. No.: PL 06F.130274

BOARD DIRECTION

An Bord Pleanála

Board Direction

Ref: 130274

The submissions on this file and the Inspector's report were considered at a Board meeting held on 10 April 03.

The Board decided unanimously to refuse permission generally in accordance with the Inspector's recommendation, and the following draft Schedule:

1. Having regard to the proximity principle as set out at Part 5.5 of the Schedule to the 1997 Waste Management (Planning) Regulations, it is considered that the proposed development, by reason of its distant location from the waste centre of gravity of the Dublin Region as identified in the 2001 Dublin Regional Waste Management Plan and to the ensuing road haulage distances associated with the transportation of waste to the development site, would conflict with that principle and would, therefore be contrary to the proper planning and development of the area.

2. The proposed development of land over and above that already zoned for development in the Courtlough Action Area Plan would adversely affect the use of a national road, the M1 / N1 linking Dublin and Belfast, which is a route of National and European importance, by reducing the capacity of the interchange and therefore restricting the movement of traffic between the M1 and the N1 (Balbriggan Road) and on and off the associated slipways.

3. The site of the proposed development is located remote from any established urban area and within an area which is governed by the zoning objective in the current Fingal Development Plan "to protect and provide for the development of agriculture and rural amenities", which objective is considered reasonable. Having regard to the industrial nature of the proposed development and the absence of any functional linkages with surrounding agricultural land uses, and having regard also to the scale of the proposed development, which impacts adversely on the amenities of the rural landscape, it is considered that the proposed development would conflict with the provisions of the Development Plan zoning objective for the site and would, therefore, be contrary to the proper planning and development of the area.

4. The site is located between two areas of sensitive landscape and within a listed view, as designated in the current Fingal Development Plan. It is considered that the proposed development, by reason of its height, scale and design, would be visually obtrusive in the rural landscape and would be out of character with the pattern of development permitted on adjoining lands in accordance with the Courtlough Action Area Plan. The proposed development would seriously injure the visual amenities of the area and would, therefore, be contrary to the proper planning and development of the area.

Note: the Board did not accept the view expressed by the Inspector in the final sentence of paragraph 21.6 on page 83 of her report.

Board Member _____ Date 11 Apr. 03

Derek Maynard

ORDER

An Bord Pleanála

LOCAL GOVERNMENT (PLANNING AND DEVELOPMENT) ACTS, 1963 TO 1999

Fingal County

Planning Register Reference Number: F02A/0266

APPEAL by Zero Waste Fingal care of O'Neill Town Planning of Harbour Road, Howth, County Dublin and by Herhof Environmental Limited care of HKR Chartered Town Planners of Carnegie House, Library Road, Dun Laoghaire, County Dublin against the decision made on the 10th day of June, 2002 by Fingal County Council to refuse permission to the said Herhof Environmental Limited for development comprising the construction of a waste treatment and recycling facility at Courtlough, Balbriggan. The proposed development comprises of an office building (approximately 250 square metres), Herhof Stabilat® Plant (approximately 7,400 square metres), power plant (approximately 3,600 square metres) with connecting conveyor and two silos, plus sprinkler and water tanks and ancillary buildings for sprinkler pumps, wash plant and emergency generator. New pedestrian and vehicular access/egress off the N1 Balbriggan Road, internal circulation roads, weighbridges, truck and wheel wash facilities, service area and associated site works. Thirty car parking spaces, ESB substation and fuel tanks, also temporary treatment and percolation area until permanent services available on a 6.5 hectare site located east of the proposed M1 motorway, south of R132 Rowans Road Interchange and west of the N1 Balbriggan Road in the townland of Courtlough, Balbriggan, County Dublin:

DECISION: Pursuant to the Local Government (Planning and Development) Acts, 1963 to 1999, permission is hereby refused for the said development for the reasons set out in the Schedule hereto.

SCHEDULE

1. Having regard to the proximity principle as set out at Part 5.5 of the Schedule to the Waste Management (Planning) Regulations, 1997 it is considered that the proposed development, by reason of its distant location from the waste centre of gravity of the Dublin Region as identified in the Waste Management Plan for the Dublin Region 2001 and to the ensuing road haulage distances associated with the transportation of waste to the development site, would conflict with that principle and would, therefore be contrary to the proper planning and development of the area.

2. The proposed development of land over and above that already zoned for development in the Courtlough Action Area Plan would adversely affect the use of a national road, the M1/N1 linking Dublin and Belfast, which is a route of National and European importance, by reducing the capacity of the interchange and therefore restricting the movement of traffic between the M1 and the N1 (Balbriggan Road) and on and off the associated slipways.

3. The site of the proposed development is located remote from any established urban area and within an area which is governed by the zoning objective in the current Fingal Development Plan "to protect and provide for the development of agriculture and rural amenities", which objective is considered reasonable. Having regard to the industrial nature of the proposed development and the absence of any functional linkages with surrounding agricultural land uses, and having regard also to the scale of the proposed development, which impacts adversely on the amenities of the rural landscape, it is considered that the proposed development would conflict with the provisions of the development plan zoning objective for the site and would, therefore, be contrary to the proper planning and development of the area.

4. The site is located between two areas of sensitive landscape and within a listed view, as designated in the current Fingal Development Plan. It is considered that the proposed development, by reason of its height, scale and design, would be visually obtrusive in the rural landscape and would be out of character with the pattern of development permitted on adjoining lands in accordance with the Courtlough Action Area Plan. The proposed development would seriously injure the visual amenities of the area and would, therefore, be contrary to the proper planning and development of the area.

Member of An Bord Pleanála
duly authorised to authenticate
the seal of the Board.

Dated this day of 2003.

INSPECTOR'S REPORT

Sections Relevant to Traffic

An Bord Pleanála

Inspector's Report

An Bord Pleanála Ref. No.:	PL06F.130274.
Reg. Ref.:	F02A/0266.
Planning Authority:	Fingal County Council.
Proposed Development:	The construction of a waste treatment and recycling facility, power plant, office building, ancillary facilities, associated site works on a 6.5 hectare site in the townland of Courtlough, Balbriggan, Co. Dublin.
Type of Application:	Permission.
Planning Authority Decision:	Refusal of permission.
Type of Appeal:	First and third parties against decision.
Appellants:	First party Herhof Environmental Ltd. Third Party Zero Waste Fingal.
Observer:	A. & A. Kennedy, A. Staines et al.
Site Inspection:	14.12.2002 and 02.03.2003.

Mitigation Measures

None are required other than monitoring of topsoil removal at construction phase.

H. Transportation

Receiving Environment

The site lies on the west side of the N1 near the southern end of the M1/Balbriggan by-pass; a grade separated interchange lies 350 metres north of the site - facilitating connection between the M1, the R132, Rowans Road and the fN1 Swords-Balbriggan Road. On completion of the motorway the N1 will be reinstated as the through route between the towns of Swords and Balbriggan.

An inspection of the road network in the area concludes that the capacity of the existing road network is largely independent of the traffic flow on the M1 but is dependent to a significant degree on the capacity of the roundabout at the interchange and at the T-junction on the N1/Balbriggan Road. The EIS states that the approximate capacity of the existing N1/M1 interchange link is 15,600 vpd. Based on traffic flow figures recommended by Fingal County Council (which includes traffic generated by permitted development at the Courtlough Interchange at sites B, C and F) capacity is expected to be reached in 2009 (cf. Table 3.6.4) Prior to 2009 therefore there will be spare capacity at the M1/N1 interchange link to cater for development generated flows; based on a peak hour design flow of 13 % of AADT the spare two way capacity available for development flows on the M1/N1 link would be in the order of 936 vehicles per hour in 2003 falling to 533 vehicles per hour in 2006 and to 227 vehicles per hour in 2009.

Potential/Predicted Impacts:

The proposed development allows for the future expansion of the Stabilat plant to a total of 150,000 tonnes per annum handling capacity and a future expansion of the power plant by 2.4 MW. Access to the development site will be from the N1. **Trip generation for the proposed facility is based on data supplied by Herhof Environmental Ltd.** and includes the assumption that "no Stabilat will be removed from the site". In addition to the delivery of waste and removal of residual and by products from the facility there will be a number of specialists deliveries to the site which for the purposes of worst case scenario are assumed to all occur on one day; with staff and visitor traffic movements included, a total of 150 inbound car light vehicles movement and 332 HGV/commercial vehicles movements per week have been calculated with a similar number of departures; in worst case terms this equates to 30 light vehicle and 70 HGV, inbound movements per day with a similar number of daily out bound movements; assuming an even distribution of delivery/dispatch vehicles over the day this equates to a total of 10 arrivals and 10 departures from the site during the AM peak hour period plus two to three staff/visitor arrivals also during that time.

The E.I.S. states that by combining interchange flows with development generated flows, maximum **one-way** post development flows on the network can be calculated for the design year: this results in (a) north and southbound off-traffic volumes in the AM peak hour at the slip roads of between 522 and 581 vehicles, (b) west and eastbound peak hour flows on the interchange bridge of 676 and 742 vehicles respectively, (c) west and eastbound peak hour flows on the M1/N1 link of 945 and 1,022 vehicles respectively, (d) north and southbound peak hour flows on the N1 of 576 and 531 vehicles respectively and to west and eastbound peak hour flows at Rowan's Road of 465 and 471 vehicles respectively.

Projected **two-way** flows are also calculated for the AM peak hour in the design year of 2006.

For the N1 this results in a two-way flow of 1,944-1,991 vph or an AADT of 29,563 vpd compared to a Level of Service D capacity of 55,500 vpd.

On the M1/N1 link between roundabouts 3 and 4 the projected two-way flow is 1,967 vph during the AM peak compared to a Level of Service D capacity of 2,125 vph for a 10 metre wide carriageway.

On the Swords-Balbriggan Road (N1) the projected two-way flow is 1,041-1,107 vph during the Am peak compared to a Level of Service D capacity of 1,700 vph for a 7.5 metre wide carriageway. On the western section of Rowan's Road the projected two-way flow is 936 vph during the AM peak compared to a Level of Service D capacity of 1,700 vph for a 7.5 metre wide carriageway.

The capacity of the existing and proposed roundabouts to accommodate those flows following completion of the development in 2006 has been assessed using the ARCADY programme. The result indicated that all three roundabouts will function satisfactorily during the a.m. peak hour. The capacity of the T-junction on the western side of the N1 Swords Road from which the site will be accessed was also assessed using PICADY; results indicate that the junction functions satisfactorily in the a.m. peak hour during the design year of 2006.

Mitigation Measures

The primary mitigation measure associated with the development of the site is its location in the M1/N1 transportation corridor; other mitigation measures include improvements to the road systems include the construction of a new roundabout on the N1 east of the interchange, and the construction of new public footpaths along the site frontage.

E.I.S. ASSESSMENT

The E.I.S. overall is characterised by a clear structure, logical sequence, a reasonably comprehensive text and supporting graphics.

It does not, however, include evidence of consultations with affected persons or bodies, the outcome of which could have been expected to influence the consideration of alternatives (processes and locations) and the range and nature of any mitigation measures proposed.

As regards project description, the production processes are satisfactorily described but the market locations for end products for both disposal and recycling purposes are described in a cursory manner only.

Neither is the risk of accident or hazard discussed in any detail, particularly in regard to fire, explosion and emission discharges. The effects of such accidents and the means to prevent and respond to same, e.g. by way of contingency arrangements, are not quantified or discussed in detail.

The consideration of alternatives, particularly in regard to process/technology and location, is conspicuously absent while decommissioning arrangements, site restoration and potential after-use is not discussed.

Finally, the EIS states that trip generation data has been supplied by Herhof Environmental Ltd. However, the reference base for that data has not been identified.

I therefore endorse the planning authority's first reason for refusal.

21.10 With regard to the Planning Authority's second reason for refusal - premature development pending the upgrading of the road network in the area - previous permissions for development at the Courtlough Action Plan lands are relevant to this reason.

Under Reg. Ref. 01A/1383 and PL06F.128755 permission was sought to carry out alterations to the existing road network at the N1 (Old Swords Road/Balbriggan Road/Rowan's Road) to facilitate access to Sites B and E (described as Phase 1 development) and Sites D and F (described as Phase 2 development). An internal report on the development by Fingal County Council Transportation Department noted that:

> the network of road improvements suggested by the applicant is sufficient to serve the requirements of Phase 1 of the proposed development. Improvement works to the motorway junction slip roads will be necessary (subject to statutory consent to a variation of the existing motorway order) to facilitate the completion of Phase 2 of the proposed development and the retention of capacity of 1,000 pcu each way on each link to the motorway junction for non-development related traffic.

Permission for the proposed development was subsequently granted by the planning authority subject to compliance with Condition No. 2 namely that the proposed road works should serve only Phase 1 of the Action Plan sites namely Sites B, C and E. Although the planning authority's decision was the subject of an appeal to An Bord Pleanála, Condition No. 2 was not challenged.

An observation on the above application by the NRA stated:

> any development within 1.5 kilometres of the motorway must enhance the capacity of the junction or interchange with the motorway, such

that, there is no reduction in capacity of the junction/interchange due to the development.

It should be noted that Level of Service C is required of all elements of the interchanges/junctions.

Under Reg. Ref. 01A/0777 permission was sought for the development of Sites D, E and F of the Courtlough Action Area Plan lands. Permission was granted by the planning authority for the development of Site E immediately to the north of the appeal site; permission was refused however for the development of Sites D and F due to deficiencies in the existing and permitted road network which would render that network unsuitable to carry the increased road traffic likely to be generated by Phase 2 of the Action Plan lands (Sites D and F). In a subsequent first party appeal, the Planning Authority's decision re Sites D and F was endorsed by An Bord Pleanála, generally for the reasons already identified by the planning authority namely:

(i) That the development would be premature due to constraints of (i) the existing deficiency in the road serving the area of the proposed development in that the existing network as granted permission under Ref. 01A/1383 would be unsuitable to carry the increased road traffic likely to be generated by Sites D and F and (ii) the deficiency that will arise from the increased traffic likely to be generated by Sites B, C and E which would render the M1, Rowan's Road/Naul Road interchange unsuitable to carry the increased road traffic likely to result from the proposed development pending the development of an upgraded and improved road layout to serve Sites D and F.

(ii) That the development of Sites D and F which form part of Phase 2 of the Action Plan lands would endanger public safety by reason of traffic hazard and obstruction of road users as the road network proposed to serve this development granted under Ref. 01A/1383 is not sufficient to meet the capacity requirements of Phase 2 and the proposed

development would therefore materially contravene Condition No. 2 of Ref. 01A/1383.

(iii) The proposed development of Sites D and F would adversely affect the use of the N1 and M1 routes linking Dublin and Belfast - a route of National and European importance - by reducing the capacity of the interchange and restricting the movement of traffic between the M1 and N1 and on and off the associated slipways.

Again it should be noted that the NRA in an observation on that application reiterated the requirement that "any development within 1.5 kilometres of the motorway must enhance the capacity of the junction or interchange with the motorway, such that, there is no reduction in the capacity due to the development of the junction/interchange.

21.11 It is quite clear therefore from the context of Reg. Ref. 01A/1383 (PL06F.128755) and Reg. Ref. 01A/0777 (PL06F.129151) that:

(i) The existing and permitted alterations to the road network in the vicinity of the interchange are only sufficient to meet the capacity requirements generated by the development of Sites B, C and E (Phase 1) at Courtlough.

(ii) That the development of any additional sites including sites associated with Phase 2 must await further improvement works to the motorway junction slip roads in order to ensure that a capacity of 1,000 pcu each way on each link to the motorway junction for non-development related traffic can be provided.

(iii) That statutory consent to a variation of the existing motorway order will be required prior to any such improvement works taking place.

The first party appellant considers that the development is not premature as the existing and permitted road network in the vicinity of the site provides

sufficient capacity for the proposed development which it is stated will generate only minimal traffic flows. The appellant has come to that conclusion on the basis of an analysis of post development flows on the road network. The post development flows are obtained by combining interchange flows (including flows generated by sites B, C and E at Courtlough) with development generated flows. The interchange flows are, it is stated in the EIS, based on volumes of interchange traffic stated by Fingal County Council for the year 2020 and pro rated downwards for intervening years by the developer.

21.12 The analysis by the developer of post development flows on the network has in particular concentrated on the Link and Junction capacities of that network noting that:

> The main impact of a large traffic generating development is the imposition on the surrounding road network of traffic volumes which could lead to possible congestion and delays if, as a result, the capacity of the nearby junctions is either being approached or exceeded.

The capacities of the various links are set out at P.34 of the T.I.S attached to the EIS. I would draw the Board's attention in particular to the projected two-way flow on the single carriageway M1/N1 link between roundabouts 3 and 4 during the AM peak hour (for diagram of roundabout cf. Figure 3.6.11 and 3.6.12). That link is of major importance in the context of the commissioning of the M1 between Lissenhall and the Balbriggan By-Pass as traffic wishing to access the M1 south from Balbriggan will access it via the link. The T.I.S states that that link will be subject to a projected two-way flow of 1967 vehicles per hour which compares to a Level of Service D capacity of 2,125 vehicles per hour for a 10 metre wide carriageway. It would seem therefore that that link which provides access to the appeal site from the M1 will be close to Level of Service D capacity at design year and may therefore fail to meet Level of Service C capacity as required by the NRA. On that basis therefore I consider that the proposed development will inevitably result in the erosion of capacity at the interchange and as such will conflict with NRA

policy stated in correspondence to the planning authority of 20.2.02 under PL06F.129151 namely:

> any development within 1.5 kilometres of the motorway must **enhance** the capacity of the junction or interchange with the motorway such that there is no reduction in capacity of the junction/interchange.

The proposed development would therefore appear not only to conflict with the requirements of the NRA but also with the recommendations of the independent consultants in a report prepared by them for the Transportation Department of Fingal County Council. That report stated in relation to the development of Action Plan Lands at Courtlough that:

> Further phases of the development * should only be considered following a Traffic Impact Assessment which allows for a reserve capacity of 1,000 vehicles/hour/links. It is envisaged that this will require substantial improvements and may require the provision of an overbridge.

* i.e. phases other than Phase 1.

As I have noted, that capacity would not appear to be available, on the vicinity of roundabouts 3 and 4 on the M1/N1 link.

21.13 I also note that the layout of the existing interchange at Courtlough would appear to have been designed on the basis of a rural road facility not on the basis of a facility designed to accommodate traffic generated by the development of 66 hectares of light industrial/warehousing land. The proposed development will further increase pressure on the interchange to accommodate not just lands zoned for development in the vicinity of the interchange but also lands outside the zoned boundaries. I consider that not only is this unacceptable in principle due to deficiencies in the capacity of the interchange but it is also unacceptable for strategic land use planing

considerations particularly when the observations of the DTO of 18.2.02 on Reg. Ref. 01A/0777 (PL06F.129151) are taken into account. In those observations the DTO restated its objections to the Courtlough Action Area Plan on the basis that it was:

> considered to be inconsistent with the Strategic Planning Guidelines and the DTO strategy. It will encourage significant employment generating activities in the hinterland area
>
> and that
>
> the development of employment zones outside of the designated development zones will attract investment away from the designated centres, will result in increased trip lengths and undermine the policy of the strategic planning guidelines which promote "self sufficient" primary development centres.

The above comments of the DTO are, I consider, equally pertinent and compelling in respect of the proposed development and mirror the policies set out in the Strategic Planning Guidelines and the National Spatial Strategy on the maintenance of the divide between urban/town and rural areas.

21.14 In conclusion therefore I consider that:

(a) the proposed development, will ultimately contribute to an erosion of existing capacity at the interchange, particularly on the N1/M1 link between roundabouts 3 and 4, rather than an enhancement of it as recommended by the NRA.

(b) It consolidates an undesirable pattern of land use development at Courtlough which would appear to conflict with Strategic Planning Guidelines for the Dublin Hinterland viz. the protection of the greenbelt which aims to reduce, inter alia, pressure for increased development in the countryside and agricultural areas.

I therefore endorse the Planning Authority's second reason for refusal.

21.15 Without prejudice to the above argument I also note that the proposed development does not comply with the policy for the Action Area Plan at Courtlough as set out in the Fingal Development Plan. The Plan states that:

> The motorway interchange at Courtlough is uniquely positioned in that it is not required to directly or mainly serve an urban area. This provides a unique opportunity for the location directly adjoining the motorway of **facilities associated with the Dublin-Belfast Economic Corridor**.

The facilities proposed at Courtlough are a major wholesale fruit and veg market, motorway services, warehousing facilities, and a science and technology park - facilities which will benefit from their proximity to the economic corridor. The proposed development given its limited catchment areas is not a development which will be facilitated by the Corridor. In that regard therefore there is no economic or land use rationale for its location at Courtlough.

21.16 **Re reason for refusal no. 3 - inadequate EIS** - the first party appellant stated that the EIS provides information as required under Articles 1 and 2 of the 1999 EC (EIS Regulations). In response I note that Paragraphs 1 and 2 of the Second Schedule of the 1999 EC (EIA) (Amendment) Regulations 1999 specify a range of matters on which information must be provided in the EIS. The Regulations however do not specify the range or depth of that information. In the current case while the EIS technically complies with the Regulations, the information submitted lacks substance in certain areas. I refer particularly to the informational context of the EIS associated with Paragraph1(d) of the Regulations - **an outline of the main alternatives studied by the developer... taking into account the environmental effects.** There is not any evidence in the EIS to indicate that the developer has given serious consideration to either alternative sites, or to alternative fuels and technology.

Typical EIS chapter of 'Carranstown Waste Management Facility'

7. TRAFFIC

7.1 Introduction

Atkins McCarthy were commissioned by Project Management to carry out a traffic impact assessment to assess the impact of construction and operational generated traffic on traffic levels on the surrounding road network.

The assessment involved carrying out a traffic count to establish existing traffic levels on the adjacent regional roads. By estimating the levels of construction and operational generated traffic the impact of this traffic on the surrounding road network was then predicted.

An analysis of the capacity of the road infrastructure at the proposed site entrance was carried out using the UK Department of Transport PICADY (Priority Intersection Capacity and Delay) model. This Model predicts capacities, queues and delay at major and minor road junctions.

The traffic flow capacity of the roads was established using design guideline RT180 'Geometric Design Guidelines' published by the Environmental Research Unit.

A full copy of the traffic impact assessment report is included in Attachment 8.

7.2 Existing Environment

7.2.1 Road Infrastructure

The development site is located on the north side of the R152 regional road between Drogheda and Duleek. The R152 is a single carriageway road with a typical carriageway width of approximately 7.0 metres and a 60mph speed limit (at the development site). It extends from the N1 National Primary Route at Drogheda to the N2 National Primary Route south of Rathleigh. The R152 forms a traffic signal controlled T-junction with the N1 and a priority controlled T-junction with the N2.

To the south-west of the site the R152 forms a priority controlled junction with the R150 which provides a link to the N1 at Julianstown and the N2 north of Balrath.

The National Roads Authority (NRA) programme includes a plan to by-pass Drogheda as part of the M1 Northern Motorway scheme. This is expected to be open to traffic from 2004. This by-pass will form an important addition to the North/South strategic road corridor improving traffic flow.

The horizontal alignment of the proposed motorway will traverse the R152 at the proposed Drogheda South Interchange approximately 2km north of the development site. The Drogheda South Interchange is a spilt type interchange on the Donore Road and the R152 Platin Road which provides a new link road between the Donore Road and the R152. The proposed interchange will facilitate all traffic movements on and off the motorway.

7.2.2 Existing Traffic Flows

Traffic counts were carried out on the 18th May 2000 during morning and evening peak periods on the R152 at the proposed site and on the R150 west of Duleek. The counts were carried out from 7.00 to 9.00 am and 4.30 to 6.30 pm. The overall recorded morning and evening peak flows occurred between 7.45 am and 8.45 am and 5.00 pm and 6.00 pm respectively. The two-way peak hour traffic flows are summarised in Table 7.1 below. All traffic flows are expressed in terms of passenger car units (pcu's).

Table 7.1: Existing Traffic Flows

Road	Morning Peak Hour (pcu's)	Evening Peak Hour (pcu's)
R150	264	278
R152	799	902

The percentage of heavy commercial vehicles (hcvs) on the R150 was approximately 18% during the morning peak hour and 16% during the evening peak hour. The proportion of hcvs on the R152 was 13% during the morning peak hour and 12% during the evening peak hour.

The design capacity of the R152 is in the range 700 to 1,200 pcus/hour two-way at Level of Service C (LOS C) and 1,300 to 1,500 pcus /hour two-way at Level of Service D (LOS D) based on the design capacities for undivided rural roads in the E.R.U. design guideline RT180. The design capacity of the R150 west of Duleek is in the range 575 to 950 pcus/hour two-way at LOS C and 1,025 to 1,200 pcus at LOS D.

7.2.3 Predicted Traffic Flows

There are a number of planned developments along the R152 which would lead to increased traffic flows, most notably and a proposed AgriPark development, an Industrial Park at Duleek and the Marathon Power Plant, opposite the proposed development site. The Marathon Power Plant EIS predicts insignificant operational traffic and construction traffic associated with up to 300 construction employees and 50 hcvs per day.

Inspection of the planning files for the proposed AgriPark and Industrial Park indicates that these developments could lead to an increase in peak flows of about 120 pcus.

The development of the M1 motorway is predicted to result in reduced flows on the R152. This is because a proportion of existing traffic uses the N2 and R152 as an alternative route to the N1, and it is expected that this traffic will transfer to the M1 motorway when completed. The Preliminary Design Report for the Drogheda bypass section envisaged that this would lead to reduction of 30% in traffic flows on the R152.

Taking all these factors into account it is estimated that the year 2004 peak traffic flow will be 890 pcus.

7.3 Construction Impacts and Mitigation

7.3.1 Construction Traffic

Peak construction employment on-site is expected to be approximately 300 personnel. Assuming that all construction employees will travel to and from work by car with an average occupancy of 1.2 persons per vehicle, it is expected that the total two-way peak traffic would be of the order of 250 pcus. As the majority of construction employees will work from 7.00 am and 7.00 pm the predicted two-way peak traffic flows generated by construction employees will occur before the morning peak and after the evening peak hour.

Two-way peak construction deliveries are expected to be of the order of 100 hcvs per day, or 300 pcus, with a total two-way peak of 42 pcus.

Assuming a 64:36 north south distribution for construction employees (based on population centres around the site) and a 70:30 north south distribution for construction deliveries (based on the assumption that the majority of hcvs will travel via the M1), this results in a peak hourly flow of 160 pcus for personnel and 29 pcus for hcvs (assuming 1 hcv is equivalent to 3 pcus). This represents an increase of 189 pcus or 21% over the predicted traffic flows of 890 pcus.

7.3.2 Possible Cumulative Impacts

The operational traffic from other developments in the vicinity of the proposed development is accounted for in the predicted year 2004 traffic flows.

However, should the peak construction activity coincide with peak construction activity on the Marathon site, this would result in the order of an additional peak flow of 378 pcus on the R152. This would represent and increase of about 42% over predicted flows, giving a total flow of 1,268 pcus. This is within the capacity of the road at Level of Service D.

This increase would represent a minor to moderate temporary impact on traffic on the R152. In the unlikely event that the peak construction activity for both developments should coincide, Indaver Ireland will implement a range of mitigation measures. These will include the provision of buses from population centres for site workers, provision of cycle parking and showering facilities for locally based workers, restriction of hcv deliveries during peak hours, and staggering the arrival and departure times of site workers.

7.4 Operational Impacts and Mitigation

7.4.1 Operational Traffic

The proposed development will employ a total of ca. 50 people. Traffic will be generated as a result of employees commuting to work and also the various operational activities on site. A summary of the predicted two-way traffic volumes generated by the proposed development during the daily operational period and peak hour period is summarised in Table 7.2.

Table 7.2 Predicted Two-Way Traffic Volumes

Activity	Daily Operational Period (two-way)	Peak Hour (two-way)
Employees	111 cars	34 cars
Waste to Energy	122 hcvs	15 hcvs
Industrial Waste Sorting	22 hcvs	4 hcvs
Community Recycling Park	134 cars	6 cars
Visitors	20	1

It is anticipated that approximately 64% of all hcvs associated with the development will travel to and from the site via the M1 and the R152, i.e. from the north. The remaining 36% of the hcvs will travel to and from the site via the N2 and R152, i.e. from the west.

A similar distribution on the R152 is expected for traffic generated by both employees and the community recycling park. This assessment is based on the location of urban centres within a 30 minute travel time of the proposed waste management facility.

7.4.2 Impact of Operational traffic on road network

As the development is expected to be completed in 2004, this year is taken as the plan year for the purposes of this assessment. The traffic levels on the M1 motorway and N2 primary route were obtained from the EIS for the proposed M1 Northern Motorway scheme. The existing (2000) traffic volumes were factored to 2004 levels using an assumed annual average growth rate of 5%. The proposed Drogheda by-pass is also due to open in 2004.

The predicted peak hour two-way traffic flows for 2004 (Plan Year) on the surrounding local road network with and without the proposed development are summarised in Table 7.3.

Table 7.3: Predicted 2004 Two-Way Peak Hour Traffic Flows

Route	Predicted 2004 Two-Way Peak Hour Traffic Flows (pcus)	
	Without Development	With Development
R152, north of site	890	953 (+7.1%)
R152, south of site	890	925 (+3.9%)
R150, west of site	340	363 (+6.8%)
M1, south of Drogheda South Interchange	2,350	2,390 (+1.7%)
N2	650	670 (+3.0%)

During the plan year the R152 would operate within capacity at LOS D and possibly within LOS C depending on the percentage sight distance greater than 460m. The R150, west of Duleek, would operate within capacity at LOS C with or without the development in place. Therefore the operational generated traffic will have not have a significant impact on traffic levels on the R150 and R152 roads.

Traffic generated by the development will have a negligible impact on traffic levels on the M1 northern motorway and the N2 primary route. Both would operate within capacity at LOS C with or without the development in place.

As no significant impacts on traffic levels during operation have been identified no mitigation measures are required. However the site entrance will be designed to a high standard to prevent any local impacts at the junction.

7.4.3 Site Entrance

The entrance to the development site will be on the R152 road. Based on the recommendations of the E.R.U. RT180 design guideline there are no requirements for speed change lanes at the proposed priority controlled entrance. However, in order to allow traffic enter and leave the site without interfering with other traffic the following works are proposed at the entrance junction:

- An deceleration lane
- A climbing lane
- A right-turn lane
- A 15m turning radius at the entrance

In addition, a footpath (2m wide) on the northern side of the R152 at the development site and a pedestrian refuge island at the proposed entrance will be constructed. A layout drawing of the entrance junction is included in the main report.

Subject to discussions with Meath County Council, Indaver Ireland will provide lighting along the portion of the R152 adjoining the site. Also, subject to discussions with the local Gardai, Indaver Ireland will provide, or fund the provision of, a speed camera on the R152 in the vicinity of the site entrance.

The proposed new entrance junction was analysed for the predicted Plan Year (2004) peak hour traffic flows using the PICADY model for priority controlled junctions. The model predicted that the junction would operate with a highest Ratio of Flow to Capacity (RFC) of 0.08 and highest average delays would be 9 seconds. No significant delays would occur for turning vehicles. Therefore no further mitigation measures are required.

7.5 Conclusions

The development will generate both construction and operational traffic. The levels of both construction and operational traffic will not significantly impact on the surrounding road network and will not cause the design capacity of the roads to be exceeded. A priority controlled entrance to the development site with deceleration, acceleration and turning lanes will allow traffic enter and leave the site without interfering with other traffic on the R152.

A traffic management plan will be implemented during the construction phase to ensure that no impacts will occur during construction. These will include the provision of buses from population centres for site workers, provision of cycle parking and showering facilities for locally based workers.

The only potential impact identified is if the Marathon Power Plant peak construction phase coincides with that of the proposed development. In this case a minor to moderate impact is predicted as the increase in flows will be in the order of 40%. The R152 would still however operate within capacity at LOS D.

In the unlikely event of this occurring Indaver Ireland will implement further mitigation measures including restriction of hcv deliveries during peak hours, and staggering the arrival and departure times of site workers.

ATTACHMENT 8

TRAFFIC IMPACT ASSESSMENT

PROPOSED DEVELOPMENT AT CARRANSTOWN, CO. MEATH

TRAFFIC IMPACT ASSESSMENT

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CONTENTS

APPENDICES

1.0 INTRODUCTION

1.1 On the 11th May 2000 Project Management Limited, Engineers and Project Managers, appointed Atkins McCarthy to carry out a Traffic Impact Assessment for the proposed development of a greenfield site at Carranstown, County Meath.

1.2 The Traffic Impact Assessment is part of the Environmental Impact Statement prepared by Project Management for the project, to meet the requirements of the current Local Government Planning and Development Regulations and of Meath County Council.

2.0 METHODOLOGY

2.1 A summary of the methodology for this Traffic Impact Assessment includes the following:

- Appraisal of the existing road network;
- Appraisal of existing (2000) traffic flows including the collation of previously recorded traffic count data and on-site peak period traffic counts;
- Appraisal of parking;
- Establish trip generation and distribution of traffic flows;
- Appraisal of future road network and predicted traffic flows;
- Assess traffic impact of proposed development;
- Identify avoidance, remedial or reductive measures;
- Define forecasting methods; and
- Identify construction traffic.

2.2 The Environmental Research Unit (E.R.U.) design guidelines RT180 have been used to define the limiting capacity of the local road network in terms of a particular level of service. Level of Service (LOS) represents an objective average journey speed, under ideal conditions, combined with satisfactory conditions for overtaking and driver operation.

2.3 The U.S. Highway Capacity Manual defines six levels of service ranging from Level of Service A, representing free flow conditions, to Level of Service F, representing breakdown flow. The National Roads Authority (N.R.A.) in their National Road Needs Study for the period 2000 to 2019 confirm that studies of international practice indicate that many countries design new primary road facilities with an objective Level of Service C (LOS C). Generally, Level of Service D (LOS D) equivalent to an average inter-urban journey speed of 80 kph, is regarded as a minimum acceptable standard.

2.4 The N.R.A. define Level of Service C and D as follows for two-lane roads:

Classification	*% Time Delay*	*Average Speed*	*Passing Conditions*	*Driving Conditions*
LOS C	≤ 60	84 kph	Platoon formation occurs with passing demand exceeding opportunity	Driver delay up to 60% due to slower vehicles
LOS D	≤ 75	80 kph	Passing extremely difficult with very high demand & limited opportunity. Platoon sizes of 5-10 vehicles	Driver delay up to 75%. Turning vehicles or roadside distractions cause major shockwaves in the traffic system.

2.5 The design capacities for undivided rural roads defined in RT180 for both LOS C and LOS D are a function of carriageway width and the percentage sight distance greater than 460 metres along the route.

2.6 The proposed new entrance junction to the proposed development has been designed in accordance with the E.R.U. design guidelines RT180 and RT181 and the requirements of Meath County Council.

2.7 The British Department of Transport computer software programme PICADY has been used to assess the proposed new entrance junction to the proposed development.

3.0 FORECASTING METHODS

3.1 PICADY (Priority Intersection Capacity and Delay) is a computer software programme for calculating estimates of the capacity of major/minor road junctions, where the minor road is controlled by a STOP or YIELD sign. The geometric details of the junction are supplied to the programme together with details of the traffic flows and turning movements. The programme analyses the junction in relation to the various traffic flows and calculates the capacity of each approach. The programme also calculates the average queue length on each approach and the average delay per vehicle. The average queue length may be displayed in graphical form. This programme is issued by the British Department of Transport.

4.0 DESCRIPTION OF DEVELOPMENT

4.1 The site for the proposed development is located at Carranstown, County Meath, approximately 3 kms Northeast of Duleek, as shown on Figure 1.

4.2 It is proposed to commence construction of the proposed development during 2002. The expected construction period is 24 months with a target completion date of 2004.

5.0 EXISTING ROAD NETWORK

5.1 The site for the proposed development is located on the north side of the R152 Regional Road between Drogheda and Duleek, as shown on Figure 1.

5.2 In the vicinity of the proposed development the R152 is a single carriageway road with a typical carriageway width of approximately 7.0 metres. The R152 extends from the N1 National Primary Route at Drogheda to the N2 National Primary Route south of Rathleigh. At the proposed development site the R152 is located within the 60 m.p.h. rural speed limit zone.

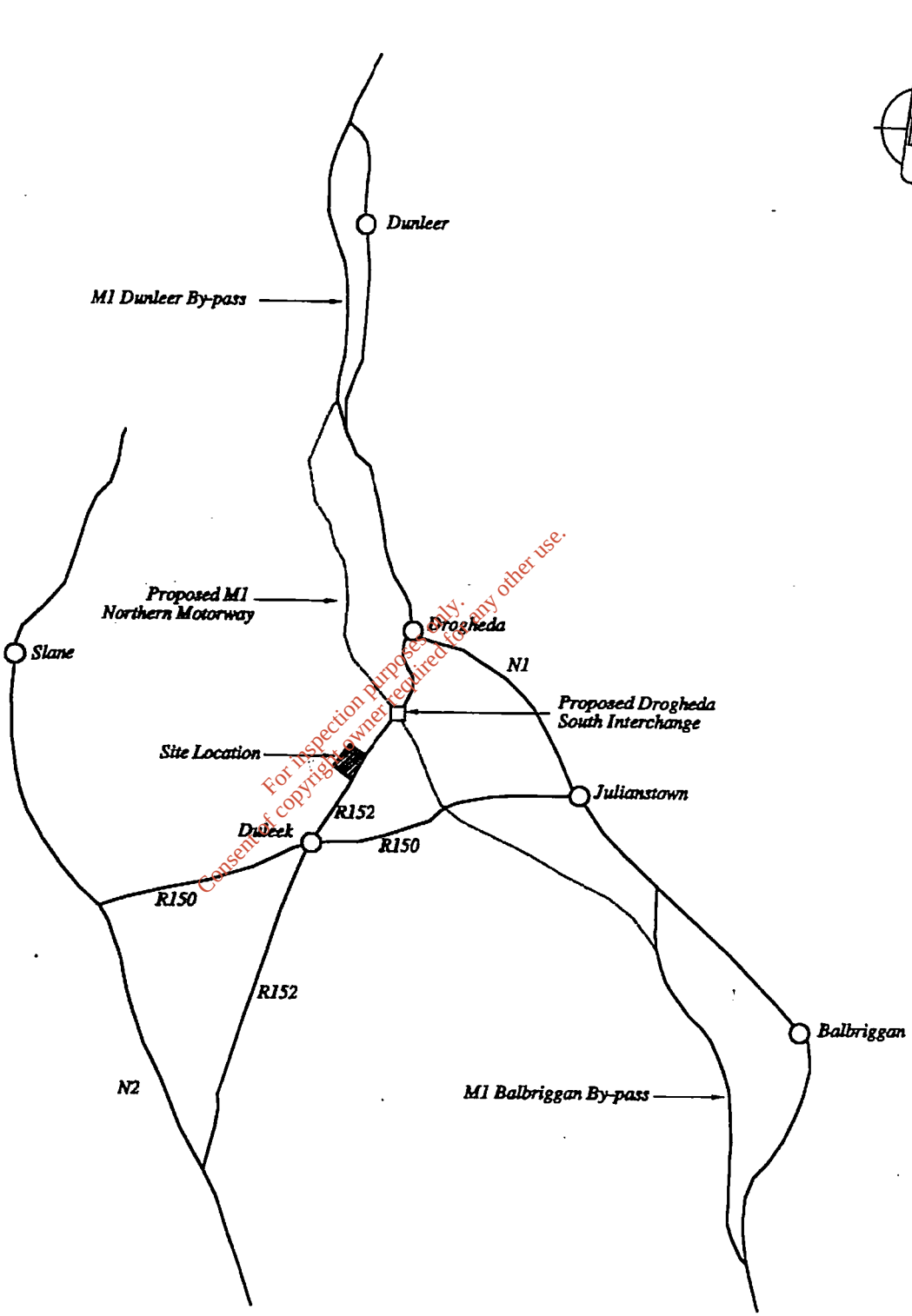
5.3 South west of the proposed development site the R152 forms a priority controlled junction with the R150 Regional Road on the east side of Duleek. The R150 provides a link from Duleek to the N1 at Julianstown and the N2 north of Balrath. West of Julianstown the R150 has a carriageway width of only approximately 4.0 metres at its narrowest location. West of Duleek, the R150 has a typical carriageway width of 5.5 metres.

5.4 The R152 forms a traffic signal controlled T- junction with the N1 in Drogheda and forms a priority controlled T-junction with the N2 south of Rathleigh. Partial left-turn deceleration and right turn speed change lanes are provided at the R152/N2 junction.

5.5 The R150 forms priority controlled T-junctions with both the N1 at Julianstown and the N2 north of Balrath. The R150/N1 junction at Julianstown in located within the 30 m.p.h. urban speed limit zone. There are no speed change lanes provided at the R150/N2 and R152/R150 junctions.

6.0 EXISTING (2000) TRAFFIC FLOWS

6.1 Morning and evening peak period traffic counts were carried out by Atkins McCarthy on Thursday 18th May 2000 on the R152 Regional Road at the proposed development site and on the R150 Regional Road west of Duleek. The traffic counts were carried out from 7.00 to 9.00 a.m. and from 4.30 to 6.30 p.m. Full details of the counts are provided in Appendix A. All traffic flows are expressed in passenger car units (p.c.u.'s) converted in accordance with the urban ratings devised by the U.K. Transport and Road Research Laboratory. On the basis of these ratings one heavy commercial vehicle is the equivalent of three passenger car units. This assumed h.c.v. rating is conservative relative to the rating recommended by the E.R.U. in RT180 of 1 h.c.v. = 2 p.c.u.'s.



SITE LOCATION FIGURE 1

6.2 The overall recorded morning and evening peak hour traffic flows occurred between 7.45 and 8.45 a.m. and 5.00 and 6.00 p.m. respectively. The evening peak hour represented the overall daily peak traffic hour.

6.3 The recorded two-way morning and evening peak hour traffic flows on the R152 adjacent to the proposed development site were 799 p.c.u.'s and 902 p.c.u.'s respectively. These recorded traffic flows are higher than those recorded for similar EIS for other proposed adjacent developments. The recorded proportion of heavy commercial vehicles on the R152 was 13% during the morning peak hour and 12% during the evening peak hour.

6.4 The recorded two-way morning and evening peak hour traffic flows on the R150 west of Duleek were 264 p.c.u.'s and 278 p.c.u.'s respectively. The recorded proportion of heavy commercial vehicles on the R150 was 18% during the morning peak hour and 16% during the evening peak hour.

6.5 Based on the latest available National Roads and Traffic Flow provided by the Environmental Research Unit (E.R.U.) it is estimated that the total two-way peak hour traffic flow on the N1 is of the order of 1,900 p.c.u.'s between Drogheda and Julianstown. The estimated total two-way peak hour traffic flow on the N2 between its junctions with the R150 and R152 is of the order of 1,000 p.c.u.'s.

6.6 The design capacity of the R152 is in the range 700 to 1,200 p.c.u.'s/hour two-way at Level of Service C (LOS C) and 1,300 to 1,500 p.c.u.'s/hour two-way at Level of Service D (LOS D) based on the design capacities for undivided rural roads set down in the E.R.U. design guidelines RT180. The design capacity of the R150 west of Duleek is in the range 575 to 950 p.c.u.'s/hour two-way at LOS C and 1,025 to 1,200 p.c.u.'s at LOS D.

6.7 Depending on the percentage sight distance greater than 460 metres along the existing route, the R152 may currently be operating in excess of capacity at LOS C but within capacity at LOS D. The R150 is currently operating within capacity at LOS C.

6.8 No significant queuing or delays were observed during the traffic surveys for vehicles turning in and out of adjoining developments or side roads in the vicinity of the proposed development site or at the R152/R150 junction.

7.0 CHARACTERISTICS OF THIS PROPOSAL

7.1 This proposal is for the construction of a waste incinerator, material recycling plant, community recycling park, bring bank, weighbridge, warehouse, pumphouse and tank, administration building, associated parking, landscaping, site works and new entrance at Carranstown, County Meath.

8.0 PARKING

8.1 The parking provisions of any development within the Meath County Council administrative area are required to be in accordance with the parking standards set down in the Draft County Development Plan 2000. These standards together with the parking requirements and proposed provision for the proposed development are as follows:

Development Type	Floor Area (m^2)	Parking Standard	Spaces Required	Spaces Proposed
Administration (offices)	350	1/25	14	28
Warehouse	900	1/100 1 h.c.v. space/ 1,000	9 1 h.c.v. space	9
Incinerator	11,500	---	---	8
Bring Bank	---	---	---	
Total:			**23 & 1 h.c.v. space**	**45 & 3 h.c.v. spaces**

8.2 The proposed parking provision exceeds the parking spaces required as defined by the Draft Meath County Development Plan 2000.

9.0 OPERATIONAL TRAFFIC GENERATION

9.1 It is envisaged that the facility would operate 24 hours per day. The facility would accept waste deliveries from 8.00 a.m. to 6.30 p.m. Monday to Friday and from 8.00 a.m. to 2.00 p.m. on Saturdays. There will be no traffic activities on Sundays or public holidays.

9.2 The proposed development would employ a total of 50 persons, of which 20 employees will work shift arrangements. Peak daily operational employment will be 34 employees of which 30 will work a standard working day. It is expected that all employees will travel to and from work by car with an average occupancy of 1.2 employees per car. On this basis, it is expected that employees will generate a total two-way daily traffic volume of 111 p.c.u.'s assuming that half of all employees also leave and return to the site during the working day. The expected two-way daily traffic volume generated by visitors is expected to be 20 p.c.u.'s.

9.3 It is envisaged that waste to energy activity at the proposed development will generate a total daily two-way traffic volume of 122 heavy commercial vehicles (h.c.v.'s), or 366 p.c.u.'s. The expected peak hourly two-way traffic volume is 15 h.c.v.'s or 45 p.c.u.'s. Industrial waste sorting activity at the proposed development is expected to generate a total daily two-way traffic volume of 22 h.c.v.'s or 66 p.c.u.'s. The expected peak hourly two-way traffic volume is 4 h.c.v's or 12 p.c.u.'s.

9.4 The generation rates for the waste to energy activity and industrial waste sorting activity are based on recorded experience at other existing similar developments including that currently operated by the Developers at Flanders, Belgium. Ash will be removed off site by the waste delivery trucks and no additional h.c.v. traffic will be generated by this activity.

9.5 It is envisaged that the proposed bring bank facility will ultimately generate a total daily two-way traffic volume of up to 134 cars after an initial growth period. The expected ultimate peak hourly traffic volume is 6 cars. Experience at other bring bank facilities indicates that peak activity occurs on Saturdays and during the weekday off-peak periods.

9.6 A summary of the predicted two-way traffic volumes generated by the proposed development both during the daily operational period and the peak hour period is as follows:

Predicted Two-Way Operational Traffic Volumes Generated by the Proposed Development

Activity	Daily Operational Period (two-way)	Operational Peak Hour (two-way)
Employees	111 cars	34 cars
Visitors	20 cars	1 car
Waste to Energy	122 h.c.v.'s	15 h.c.v.'s
Industrial Waste Sorting	22 h.c.v.'s	4 h.c.v.'s
Bring Bank	134 cars	6 cars

9.7 It is conservatively assumed that all traffic generated by the proposed development is new traffic to the surrounding local road network. All h.c.v. volumes generated by waste to energy and industrial waste sorting activity is in fact, existing traffic on the Northeast region road network that would become centralised with the provision of the proposed development.

9.8 The total predicted two-way traffic volumes generated by the proposed development during the daily operational period is 265 cars and 144 h.c.v.'s. This is equivalent to a total daily volume of 697 p.c.u.'s. During the peak hour the total predicted two-way traffic volume is 41 cars and 19 h.c.v.'s which is equivalent to a total of 98 p.c.u.'s.

10.0 TRAFFIC DISTRIBUTION

10.1 The developers envisage that approximately 64% of all h.c.v.'s generated by the waste to energy and waste sorting activities at the proposed development will travel to and from the proposed development via the R152 from north of the proposed development with the remaining 36% travelling via the R152 from south of the proposed development. Of this traffic it is also expected that 23% of all h.c.v.'s generated will also travel via the R150, west of Duleek.

10.2 A similar distribution on the R152 is expected for traffic generated by visitors, employees and the bring bank at the proposed development on the basis of the distribution of urban centres within the Northeast region in Counties Meath, Louth, Cavan and Monaghan. A summary of the distribution of these urban centres is contained in Appendix B.

11.0 ACCESS TO SITE

11.1 Access to the proposed development would be via a new entrance on the R152.

12.0 PLAN YEAR (2004) TRAFFIC FLOWS

12.1 It is envisaged that the proposed development would be completed during 2004. Meath County Council in association with Louth County Council and Drogheda Corporation expect to commence construction of the M1 Northern Motorway (Gormanstown-Monasterboice) during 2001. The proposed motorway scheme will link the M1 Balbriggan Bypass scheme with the M1 Dunleer Bypass. It is expected that the proposed scheme will be constructed by 2004. The year 2004 therefore represents the Plan Year.

12.2 The horizontal alignment of the proposed motorway extends from the northern end of the Balbriggan Bypass in a north-west direction some 4 kms west of Julianstown and crosses the River Boyne about 3 kms west of Drogheda Town Centre to tie in with the Dunleer Bypass. The alignment traverses the R152 approximately 2 kms north of the proposed development site at the proposed Drogheda South Interchange.

12.3 The Drogheda South Interchange on the proposed Northern Motorway Scheme is a split type interchange on the Donore Road and the R152 Carranstown Road incorporating a new link road between the Donore Road and the R152. The proposed interchange will facilitate all traffic movements on and off the motorway. The scheme also includes the upgrading and realignment of the R152 Carranstown Road at the Drogheda South Interchange.

12.4 The Environmental Impact Statement (EIS) for the proposed M1 Northern Motorway scheme envisaged the following projected traffic flows:

- An Annual Average Daily Traffic (AADT) volume of 17,500 vehicles in 1999 and 35,800 vehicles in 2019 on the M1 Northern Motorway south of Drogheda South Interchange;
- An AADT volume of 13,800 vehicles in 1999 and 27,900 vehicles in 2019 on the M1 Northern Motorway north of Drogheda South Interchange;
- A reduction of 200 vehicles in the 1999 AADT volume on the R152 Carranstown Road between Drogheda South Interchange and Drogheda. There are no projected traffic flows for the R152 south of Drogheda South Interchange;
- An AADT volume of 5,500 vehicles in 1999 and 12,100 vehicles in 2019 on the existing N1 route between Drogheda and Julianstown with the proposed M1 Northern Motorway in place;
- An AADT volume of 4,900 vehicles in 1999 and 8,800 vehicles in 2019 on the existing N2 route between its junctions with the R150 and R152 with the proposed M1 Northern Motorway in place.

12.5 The EIS for the M1 Northern Motorway Scheme was completed in August 1995. The projected annual traffic growth rate of 4.0% on the N1 corridor and the annual car ownership growth rate of 2.3% detailed in the EIS have been exceeded in the period up to 1999.

12.6 Accordingly the predicted 1999 traffic volumes on the existing N1, N2 and proposed M1 Northern Motorway with the proposed motorway in place detailed in the EIS have been increased by a factor of 1.10. These estimated 1999 traffic volumes on the N1, N2 and M1 routes with the proposed M1 Northern Motorway in place and the recorded existing (2000) traffic flows on the R150 were factored to 2004 levels using an assumed annual average growth rate of 5%.

12.7 The Preliminary Design Report prepared by Meath County Council for Phase 2: Carranstown to Tullyallen of the M1 Northern Motorway Scheme indicated that a proportion of existing traffic on the R152 Carranstown Road uses the R152 and N2 roads as an alternative route to the existing N1 and expected that this traffic will transfer to the proposed M1 motorway when completed. The Preliminary Design Report envisaged a decrease of 30% from existing traffic levels on the R152 Carranstown Road, west of the proposed M1 motorway.

12.8 Pre-planning submission liaison with Meath County Council and a review of the planning file indicates that total additional peak hour two-way traffic flows on the R152 generated by adjacent proposed development during the evening peak hour could be of the order of up to 120 p.c.u.'s. The equivalent additional two-way traffic flow on the R150 west of Duleek could be of the order of up to 96 p.c.u.'s. Meath County Council have indicated that these developments include a proposed power station at Carranstown, a proposed Agri Park at Duleek and a proposed Industrial/Warehouse Technology Park at Duleek.

12.9 The predicted 2004 two-way peak hour traffic flows on the R152 were determined by factoring the recorded existing (2000) traffic flows to 2004 levels using an assumed annual average growth rate of 5%, reducing this volume by 30% on the basis of the expected completion of the M1 Northern Motorway and increasing this volume to account for the additional traffic flows generated by adjacent proposed development identified by Meath County Council.

13.0 LIKELY EFFECTS OF THIS PROPOSAL WHEN OPERATIONAL

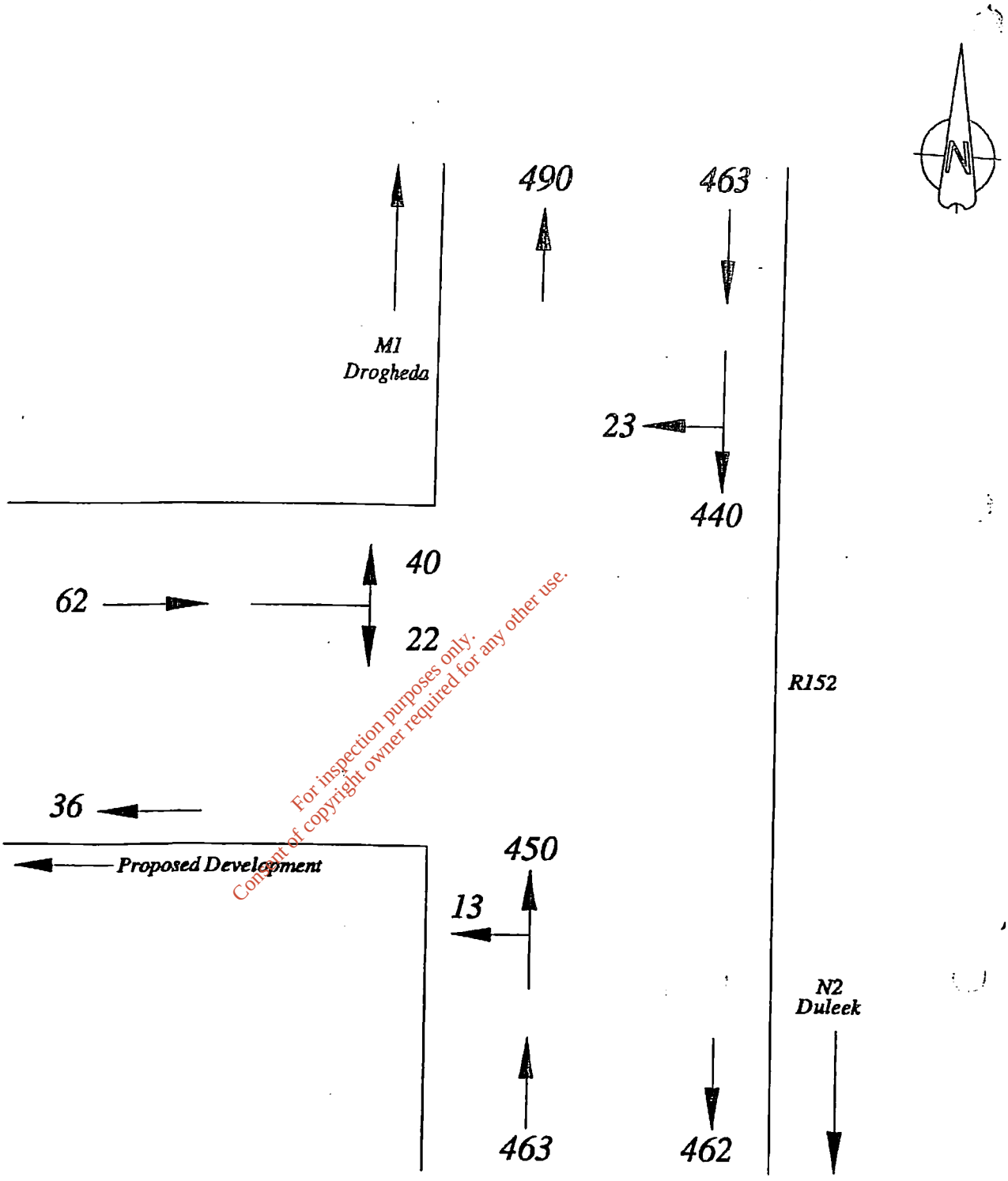
13.1 The predicted Plan Year (2004) peak hour two-way traffic flows on the surrounding local road network with and without the proposed development are as follows:

Route	Predicted 2004 Two-Way Peak Hour Traffic Flows (p.c.u.'s)	
	Without Development	*With Development when operational*
R152, north of Development	890	953 (+7.1%)
R152, south of Development	890	925 (+3.9%)
R150, west of Duleek	340	363 (+6.8%)
M1, north of Drogheda South Interchange	2,350	2,390 (+1.7%)
N2	650	670 (+3.0%)

13.2 During the Plan Year (2004) the proposed development when operational would result in an increase of up to 7.1% or 63 p.c.u.'s in two-way peak hour traffic flows on the R152, north of the proposed development and up to 3.9% or 35 p.c.u.'s on the R152, south of the proposed development. Peak hour two-way h.c.v.'s on the R152 north of the development would be up to 12 h.c.v.'s.

13.3 The proposed development would increase two-way peak hour traffic flows on the R150, west of Duleek, during the Plan Year (2004) by 6.8% or 23 p.c.u.'s. Peak hour two-way h.c.v.'s on the R150 would be 4 h.c.v.'s. The proposed development would result in an increase of 1.7%, or 40 p.c.u.'s, on the M1, north of the proposed Drogheda South Interchange and an increase of 3.0% or 20 p.c.u.'s on the N2.

13.4 The predicted Plan Year (2004) peak hour traffic flows on the R152 at the entrance to the proposed development with the development in place are shown on Figure 2.



PREDICTED PLAN YEAR (2004) PEAK HOUR TRAFFIC FLOWS (P.C.U.'s) WITH THE PROPOSED DEVELOPMENT

FIGURE

13.5 During the Plan Year (2004) the R152 would operate within capacity at LOS D and possibly within capacity at LOS C depending on the percentage sight distance greater than 460 metres along the existing route both with and without the proposed development in place. The R150, west of Duleek would operate within capacity and LOS C both with and without the proposed development in place.

13.6 The proposed 2+2 lane M1 Northern Motorway has a design capacity of the order of 4,000 p.c.u.'s/hour two-way at LOS C and 4,600 p.c.u.'s/hour two-way at LOS D based on the design capacities set down in the E.R.U. design guidelines RT180. The existing N2 route has a design capacity in the range 800 to 1,350 p.c.u.'s/hour at LOS C and 1,450 to 1,700 at LOS D. Accordingly, both the M1 and N2 would operate within capacity at LOS C both with and without the proposed development in place.

14.0 AVOIDANCE, REMEDIAL OR REDUCTIVE MEASURES

14.1 On the basis of the recommendations and warrants provided by the ERU in their design guidelines RT181 there are no requirements for speed change lanes on the R152 at the proposed priority controlled entrance to the proposed development. However, in order to enable vehicles entering and leaving the proposed development to adjust speed without interfering with other traffic, a dedicated climbing lane, deceleration lane and right-turn lane is proposed on the R152 at the priority controlled entrance to the proposed development.

14.2 The layout of the proposed entrance junction is shown at reduced 1:500 scale on Figure 3. The proposed entrance junction layout includes the following:

- A climbing lane incorporating a 3.0 metres wide lane for northbound traffic, immediately north of the proposed entrance along its site boundary;
- A deceleration lane of 150 metres in length incorporating a taper length of 50 metres and a 3.0 metres wide lane of 100 metres in length;
- A right-turn lane of 180 metres in length incorporating a 3.0 metres wide lane;
- 15.0 metres turning radii at the proposed entrance;
- A 2.0 metres wide footpath on the north side of the R152 locally at the proposed development; and
- A pedestrian refuge island at the proposed entrance.

14.3 The provision of the proposed climbing lane, speed change lanes and footpath would be achieved by widening the existing R152 road reservation on its north side along the boundary of the proposed development site and the adjoining site, south of the development site, where the necessary lands would be acquired by the developers.

14.4 The design of the proposed entrance junction is in accordance with the minimum sight triangle dimensions at new priority controlled intersections required by the E.R.U. in RT181 for a rural regional undivided road with a 100 km/hour design speed (RRU100). The minimum sight distance required proposed new entrance along the R152 for an RRU100 road classification is 280 metres.

14.5 The proposed new entrance junction on the R152 was analysed for the predicted Plan Year (2004) peak hour traffic flows with the proposed development in place using the computer software programme PICADY for priority controlled junctions. Details of the programme are given in section 3.0. Full details of the analysis are provided in Appendix C. The results are summarised as follows:

Proposed R152/Development Entrance Junction

2004 Peak Hour with Development	The junction would operate within capacity with a highest Ratio of Flow to Capacity (RFC) of 0.08. Highest average delays per vehicle would be 9 seconds. No significant queuing would occur for turning vehicles.

14.6 The internal entrance road layout at the proposed development provides for up to three inbound lanes on the approach to the weighbridge. This will facilitate a queue length of up to 12 h.c.v.'s on the inbound approach to the weighbridge within the proposed site and without restricting access to the bring bank or administration building. Maximum inbound queues at the weighbridge are expected to be of the order of up to six h.c.v.'s during peak activity.

15.0 CONSTRUCTION TRAFFIC

15.1 The expected construction period is 24 months with a target completion date of 2004.

15.2 Peak construction employment on-site is expected to be of the order of up to 300 personnel. Assuming that all employees travel to and from work by vehicle at an average occupancy rate of 1.2 persons per vehicle it is expected that the total two-way peak traffic flows generated by construction employees would be of the order of 250 p.c.u.'s. This would result in an increase of 160 p.c.u.'s in two-way traffic flows on the R152 during the peak construction traffic hour assuming the same 64:36 north:south distribution on the R152 as traffic generated by operational employees. During peak construction it is envisaged that the majority of construction employees will work from 7.00 a.m. to 7.00 p.m. Accordingly, the predicted two-way peak traffic flows generated by construction employees will occur before the morning peak hour and after the evening peak hour.

15.3 Two-way peak construction deliveries are expected to be of the order of 100 h.c.v.'s per day, or 300 p.c.u.'s, with a total two-way peak hour volume of 42 p.c.u.'s. This would result in an increase of up to 29 p.c.u.'s in two-way peak hour traffic flows on the R152 during peak construction assuming a 70:30 north:south distribution on the R152 for peak construction deliveries.

This represents an increase in the peak hourly traffic on the R152 of 189 p.c.u.'s (21%) giving a total plan year predicted flow of 1079 p.c.u.'s. This flow is within the capacity of the road at LOSD.

15.4 Hardstand parking areas will be provided within the site for all construction parking. All necessary construction warning signs and vehicle wheel wash facilities will be provided prior to the commencement of construction. Site offices and compounds will be located within the site confines.

16.0 ADJACENT PROPOSED DEVELOPMENT

16.1 A planning submission for a proposed power station at Carranstown, County Meath is currently being considered by An Bord Pleanala.

16.2 The site for the proposed power station is located south of the R152 immediately north and adjacent to the proposed development. The entrance layout proposed for the proposed power station is shown on Figure 3 and does not conflict with the proposed development entrance layout.

16.3 A review of the Traffic Impact Assessment for the proposed power station indicates the following:

- Traffic flows generated during the operational period are not considered to be significant;
- Two-way traffic flows to and from the site generated during peak construction activity are expected to be up to 506 p.c.u.'s during the peak construction generation hour from 7.00 to 8.00 a.m.

16.4 Should the peak construction activity periods and peak generation hours of both the proposed development and the proposed power station coincide it would result in an increase in two-way traffic flows of the order of 378 p.c.u.'s on the R152 during the peak construction generation hour. However, these peak construction activity periods are not expected to coincide. The peak construction generation hour is not expected to coincide with either the morning or evening peak hours on the surrounding local road network.

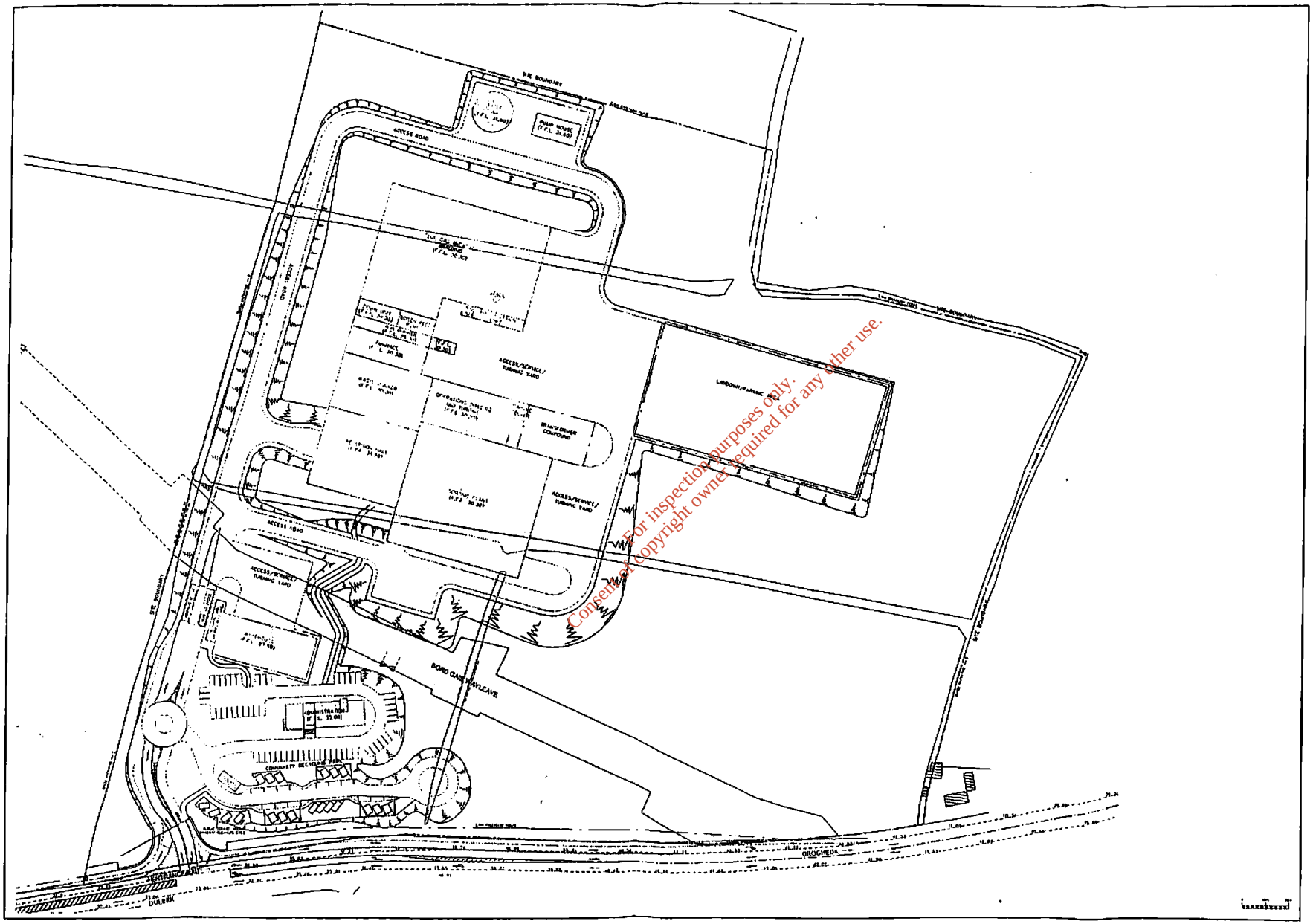
This represents an increase of 42% over the predicted 2004 flows. The total traffic would in that case be 1268 p.c.u.'s, which is within the capacity of the road at LOSD.

In the unlikely event that the peak construction activity for both developments should coincide, Indaver Ireland will implement a range of mitigation measures. These will include the provision of buses from population centres for site workers, provision of cycle parking and showering facilities for locally based workers, restriction of h.c.v. deliveries during peak hours, and staggering the arrival and departure times of site workers.

16.5 Meath County Council have also recently granted planning permission for a proposed Industrial/Warehouse/Technology Park and outline planning permission for a proposed Agri Park at Duleek.

16.6 The total additional peak hour traffic flows generated by these proposed developments on the local road network are detailed in section 12.8.

16.7 It is envisaged that construction of both the Industrial/Warehouse/Technology Park and Agri Park will be completed prior to the peak construction period of this proposed development.



PROPOSED ENTRANCE LAYOUT FIGURE 3

APPENDIX A

RECORDED 2000 TRAFFIC FLOWS

TIME PERIOD	R152 at Proposed Site				R150 West of Duleek		
	Northbound PCUs	Southbound PCUs	Total PCUs		Eastbound PCUs	Westbound PCUs	Total PCUs
07:00 - 07:15	69	121	190		39	26	65
07:15 - 07:30	62	124	186		41	27	68
07:30 - 07:45	72	99	171		37	26	63
07:45 - 08:00	114	129	243		42	33	75
08:00 - 08:15	75	116	191		38	29	67
08:15 - 08:30	77	107	184		34	27	61
08:30- 08:45	92	89	181		31	30	61
08:45 - 09:00	78	74	152		27	29	56
16:30 - 16:45	90	68	158		32	21	53
16:45 - 17:00	92	106	198		34	29	63
17:00 - 17:15	120	115	235		37	31	68
17:15 - 17:30	109	121	230		32	35	67
17:30 - 17:45	117	114	231		41	38	79
17:45 - 18:00	109	97	206		33	31	64
18:00 - 18:15	105	115	220		28	36	64
18:15 - 18:30	124	87	211		37	29	66
Total Morning Peak Hour (07:45 - 08:45):	358	441	799		145	119	264
Total Evening Peak Hour (17:00 - 18:00):	455	447	902		143	135	278

APPENDIX B

DISTRIBUTION OF URBAN CENTRES IN NORTHEAST REGION

Table 1

Towns in North East	Population	Estimated percentage of total waste
Drogheda	25,282	20.8%
Dundalk	30,195	24.8%
Navan	12,810	10.5%
Cavan	5,623	4.6%
Monaghan	5,842	4.8%
Duleek	1,731	1.4%
Carranstown	200	0.2%
Bailieborough	1,529	1.3%
Kingscourt	1,190	1.0%
Coothill	1,822	1.5%
Belturbet	1,248	1.0%
Ardee	3,791	3.1%
Ashbourne	4,999	4.1%
Laytown	3,678	3.0%
Kells	3,542	2.9%
Dunboyne	3,080	2.5%
Dunshaughlin	2,139	1.8%
Trim	4,405	3.6%
Carrickmacross	3,617	3.0%
Castleblaney	2,808	2.3%
Clones	2,170	1.8%

APPENDIX C

PICADY JUNCTION ANALYSIS

TRANSPORT RESEARCH LABORATORY

CAPACITIES, QUEUES, AND DELAYS AT 3 OR 4-ARM MAJOR/MINOR PRIORITY JUNCTIONS

VPICADY/4 ANALYSIS PROGRAM
RELEASE 2.0 (DEC 1996)

FOR SALES AND DISTRIBUTION INFORMATION,
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TRL LTD
TEL: CROWTHORNE (01344) 770018, FAX: 770864

RUN TITLE
****
R152/Proposed Entrance 2004 Peak Hour

.MAJOR/MINOR JUNCTION CAPACITY AND DELAY
****

INPUT DATA

MAJOR ROAD (ARM C) ---------- MAJOR ROAD (ARM A)
I
I
I
I
I
I
MINOR ROAD (ARM B)

ARM A IS R152 SOUTH
ARM B IS PROPOSED ENTRANCE
ARM C IS R152 NORTH

STREAM LABELLING CONVENTION

STREAM A-B CONTAINS TRAFFIC GOING FROM ARM A TO ARM B

STREAM B-AC CONTAINS TRAFFIC GOING FROM ARM B TO ARM A AND TO ARM C

ETC.

.GEOMETRIC DATA

DATA ITEM	MINOR ROAD B
TOTAL MAJOR ROAD CARRIAGEWAY WIDTH	(W) 10.50 M.
CENTRAL RESERVE WIDTH	(WCR) 0.00 M.
MAJOR ROAD RIGHT TURN - WIDTH	(WC-B) 3.00 M.
- VISIBILITY	(VC-B) 250.0 M.
- BLOCKS TRAFFIC	NO
MINOR ROAD - VISIBILITY TO LEFT	(VB-C) 250.0 M.
- VISIBILITY TO RIGHT	(VB-A) 250.0 M.
- LANE 1 WIDTH	(WB-C) 3.50 M.
- LANE 2 WIDTH	(WB-A) 0.00 M.
- LENGTH OF FLARED SECTION	15 VEHS

.TRAFFIC DEMAND DATA

TIME PERIOD BEGINS 17.00 AND ENDS 18.00

LENGTH OF TIME PERIOD - 60 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE INPUT DIRECTLY.

TIME	FROM/TO	ARM A	ARM B	ARM C
		TURNING PROPORTIONS (PERCENTAGE OF H.V.S)		
17.00 - 17.15	ARM A	0.000 (0.0)	0.100 (32.0)	0.900 (12.0)
	ARM B	0.400 (32.0)	0.000 (0.0)	0.600 (32.0)
	ARM C	0.900 (12.0)	0.100 (32.0)	0.000 (0.0)
17.15 - 17.30	ARM A	0.000 (0.0)	0.100 (32.0)	0.900 (12.0)
	ARM B	0.400 (32.0)	0.000 (0.0)	0.600 (32.0)
	ARM C	0.900 (12.0)	0.100 (32.0)	0.000 (0.0)
17.30 - 17.45	ARM A	0.000 (0.0)	0.100 (32.0)	0.900 (12.0)
	ARM B	0.400 (32.0)	0.000 (0.0)	0.600 (32.0)
	ARM C	0.900 (12.0)	0.100 (32.0)	0.000 (0.0)

TIME	FROM/TO	ARM A	ARM B	ARM C
		TURNING PROPORTIONS (PERCENTAGE OF H.V.S)		
17.45 - 18.00	ARM A	0.000	0.100	0.900

		(0.0)	(32.0)	(12.0)	
	ARM B	0.400	0.000	0.600	
		(32.0)	(0.0)	(32.0)	
	ARM C	0.900	0.100	0.000	
		(12.0)	(32.0)	(0.0)	

THE TURNING PROPORTIONS USED VARY BETWEEN TIME SEGMENTS

THE PERCENTAGE OF HEAVY VEHICLES VARIES OVER TURNING MOVEMENTS

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
17.00-17.15								
B-AC	0.63	8.01	0.079		0.0	0.1	1.2	
C-A	5.80							
C-B	0.65	8.57	0.075		0.0	0.1	1.2	
A-B	0.62							
A-C	5.56							

EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:

MARGINAL CHANGE:	LANE WIDTH (.1M)	MAJOR RD. WIDTH (.1M)	CENT RES WIDTH (.1M)	VIS TO LEFT (AHEAD FOR MAJOR) (M)	VISIBILITY TO RIGHT (M)
B-AC	0.129	0.012	0.018	0.005	0.007
C-B	0.113	0.009		0.009	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
17.15-17.30								
B-AC	0.63	8.01	0.079		0.1	0.1	1.3	
C-A	5.80							
C-B	0.65	8.57	0.075		0.1	0.1	1.2	
A-B	0.62							
A-C	5.56							

EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:

MARGINAL CHANGE:	LANE WIDTH (.1M)	MAJOR RD. WIDTH (.1M)	CENT RES WIDTH (.1M)	VIS TO LEFT (AHEAD FOR MAJOR) (M)	VISIBILITY TO RIGHT (M)

	B-AC	0.128	0.012	0.018	0.005	0.007
	C-B	0.113	0.009		0.009	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
17.30-17.45								
B-AC	0.63	8.01	0.079		0.1	0.1	1.3	
C-A	5.80							
C-B	0.65	8.57	0.075		0.1	0.1	1.2	
A-B	0.62							
A-C	5.56							

EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:

MARGINAL CHANGE:	LANE WIDTH (.1M)	MAJOR RD. WIDTH (.1M)	CENT RES WIDTH (.1M)	VIS TO LEFT (AHEAD FOR MAJOR) (M)	VISIBILITY TO RIGHT (M)
B-AC	0.128	0.012	0.018	0.005	0.007
C-B	0.113	0.009		0.009	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
17.45-18.00								
B-AC	1.75	7.40	0.236		0.1	0.3	4.4	
C-A	7.45							
C-B	0.83	8.15	0.102		0.1	0.1	1.6	
A-B	0.82							
A-C	7.36							

EFFECT ON CAPACITY (PCU/MIN) OF MARGINAL CHANGES IN:

MARGINAL CHANGE:	LANE WIDTH (.1M)	MAJOR RD. WIDTH (.1M)	CENT RES WIDTH (.1M)	VIS TO LEFT (AHEAD FOR MAJOR) (M)	VISIBILITY TO RIGHT (M)
B-AC	0.114	0.015	0.018	0.005	0.006
C-B	0.108	0.012		0.009	

QUEUE FOR STREAM B-AC

TIME SEGMENT ENDING	NO. OF VEHICLES

	IN QUEUE
17.15	0.1
17.30	0.1
17.45	0.1
18.00	0.3

QUEUE FOR STREAM C-B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.15	0.1
17.30	0.1
17.45	0.1
18.00	0.1

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

STREAM	TOTAL DEMAND (VEH)	TOTAL DEMAND (VEH/H)	* QUEUEING * DELAY * (MIN)	* QUEUEING * DELAY * (MIN/VEH)	* INCLUSIVE QUEUEING * DELAY * (MIN)	* INCLUSIVE QUEUEING * DELAY * (MIN/VEH)
B-AC	54.6	54.6	8.1	0.15	8.1	0.15
C-A	373.0	373.0				
C-B	41.4	41.4	5.2	0.13	5.2	0.13
A-B	40.1	40.1				
A-C	360.7	360.7				
ALL	869.8	869.8	13.4	0.02	13.4	0.02

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD .

* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.

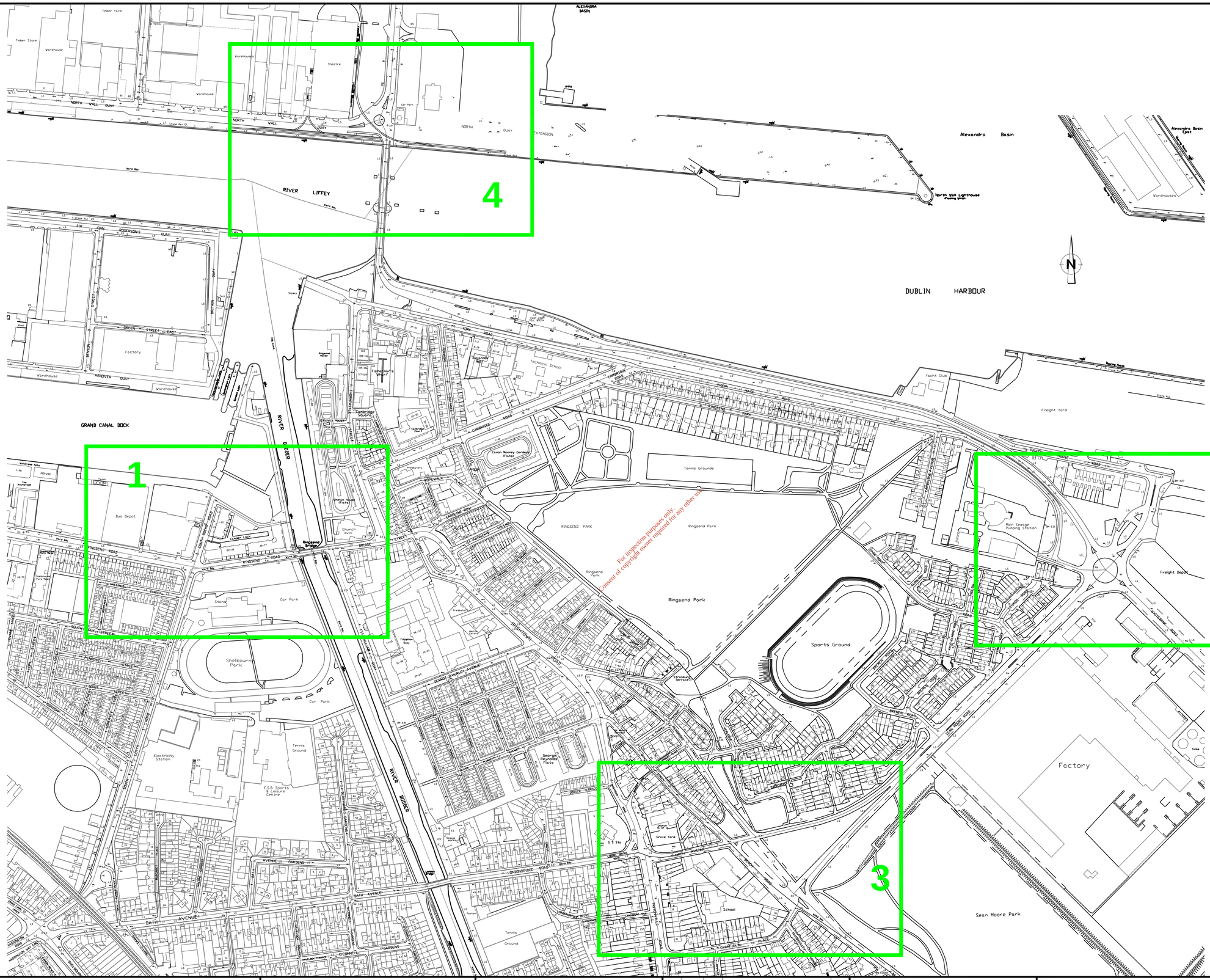
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

APPENDIX F

OS Maps of Relevant Junctions

F.1 Scheme Layout
F.2 Ringsend Road / South Lotts Road Junction
F.3 Sean Moore Road / South Bank Road Roundabout
F.4 Sean Moore Road / Beach Road / Church Avenue Junction
F.5 East Wall Road / North Wall Quay Roundabout



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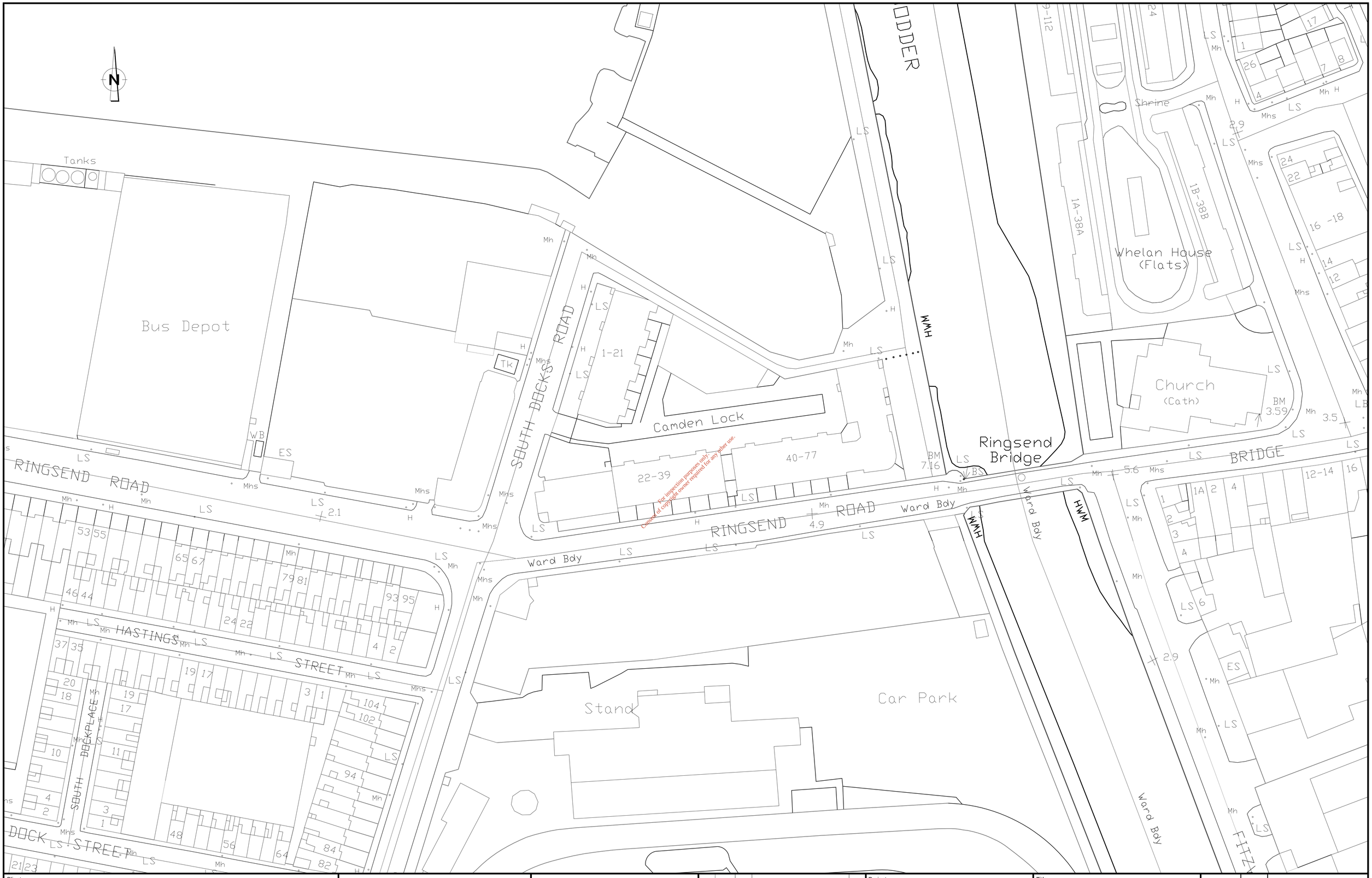
No.	Date	By / Ck	Amendment / Issue	App.
A01	Apr.'04	MM / IE	ISSUE FOR APPROVAL	GK

Project: DUBLIN WASTE TO ENERGY PROJECT

Title: SCHEME LAYOUT

Drawn by:	M.M.	Job No:	MDE0133
Checked by:	T.E.	File No:	MDE0133FIG00F1
Approved by:	G.K.	Drg. No: F.1	Rev: A01
Scale:	1:2500@A1		
Date:	Apr.'04		



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A01	Apr.'04	MM / TE	ISSUE FOR APPROVAL	GK

Project: DUBLIN WASTE TO ENERGY PROJECT

Title: RINGSEND ROAD/ SOUTH LOTTS ROAD JUNCTION

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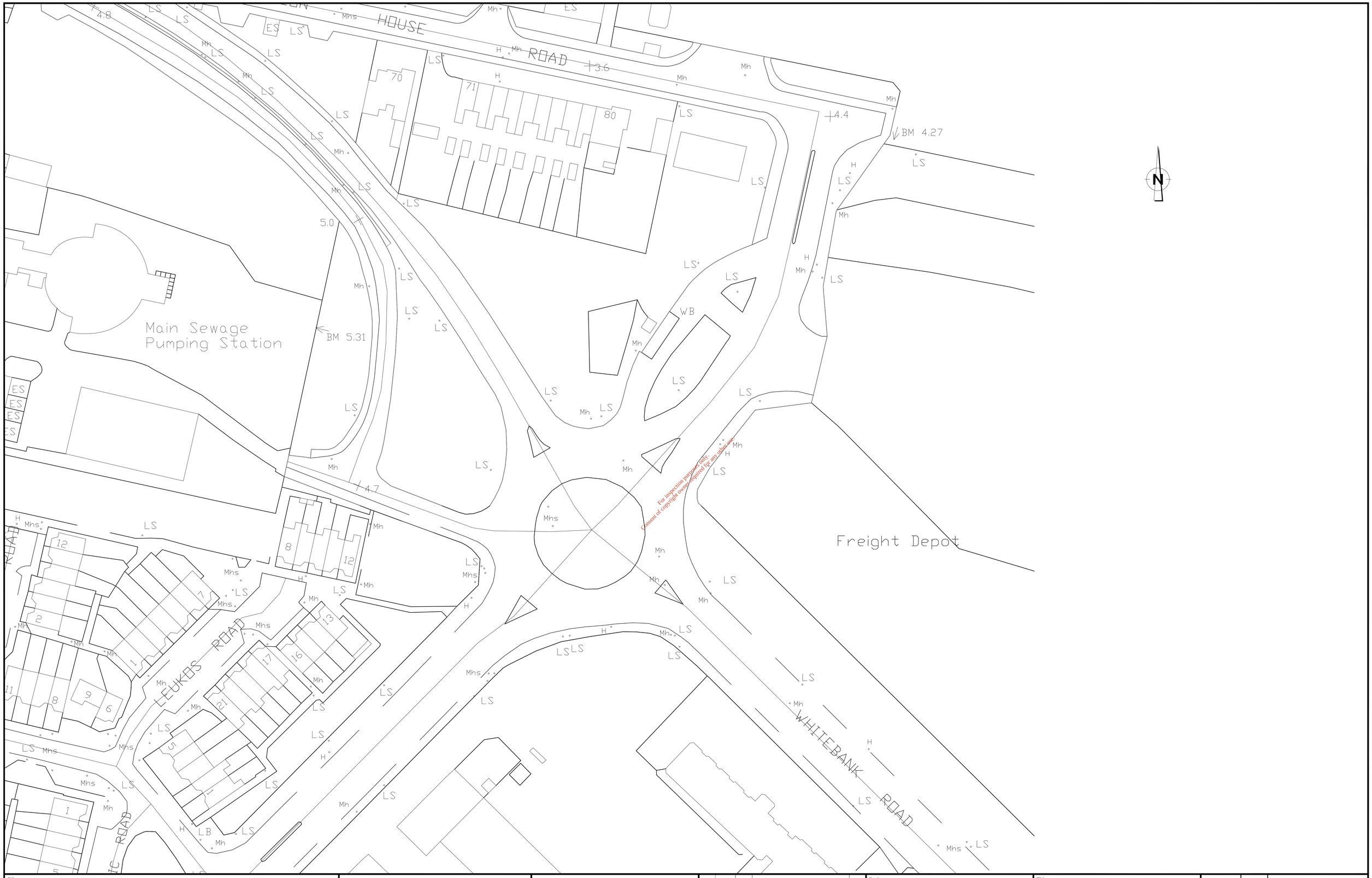
Checked by:	T.E.	File No:	MDE0133FIG00F2
Approved by:	G.K.	Drg. No:	F.2
Scale:	1:500@A1	Rev:	A01
Date:	Apr.'04		



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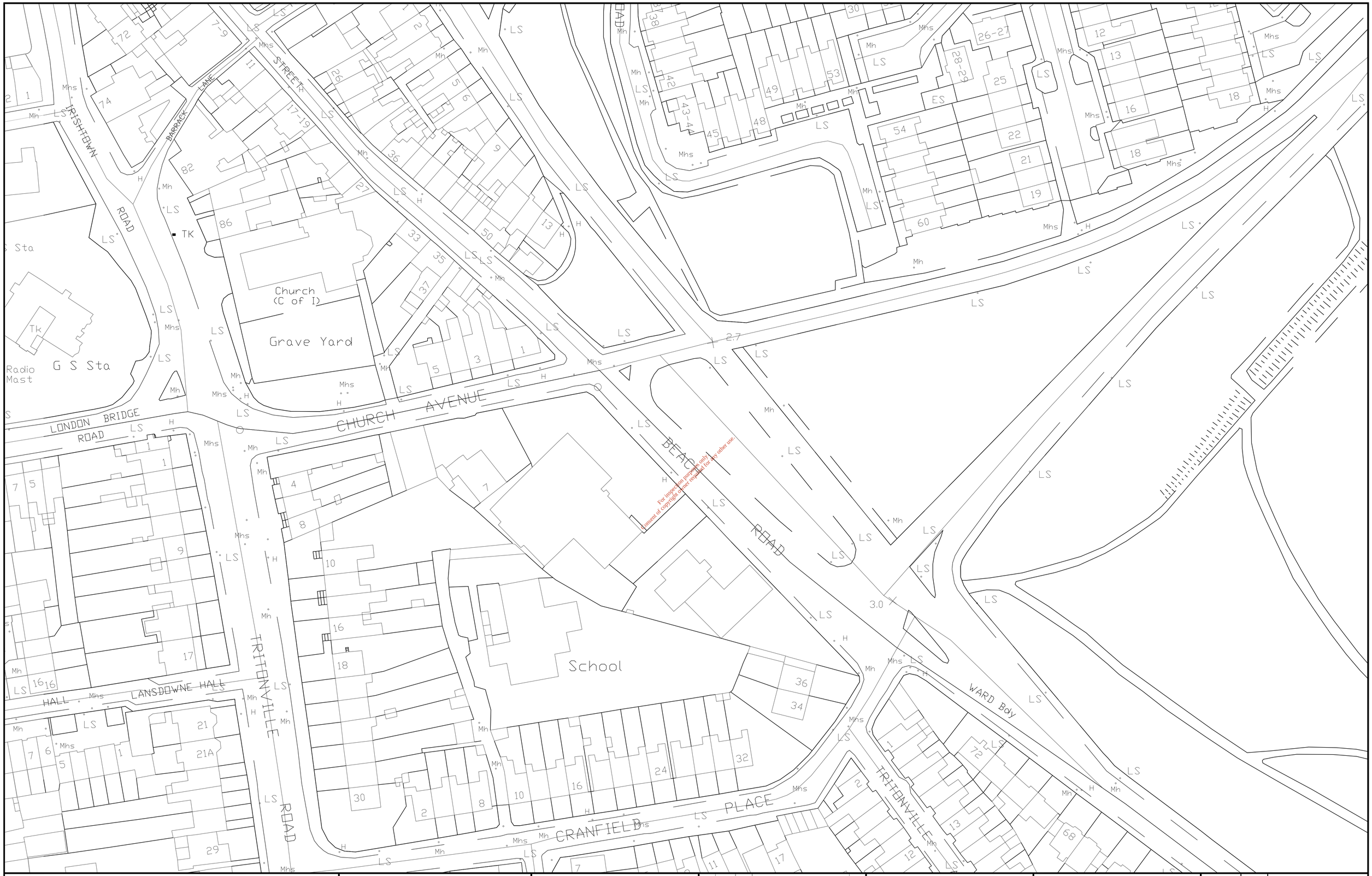
A01	Apr.'04	MM / TE	ISSUE FOR APPROVAL	GK

Project: DUBLIN WASTE TO ENERGY PROJECT

Title: SEAN MOORE ROAD/ SOUTH BANK ROAD ROUNDABOUT

Drawn by:	M.M.	Job No:	MDE0133
Checked by:	T.E.	File No:	MDE0133FIG00F3
Approved by:	G.K.	Drg. No:	F.3
Scale:	1:500@A1	Rev:	A01
Date:	Apr.'04		



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No.	Date	BY / CK	Amendment / Issue	App.
A01	Apr.'04	MM / TE	ISSUE FOR APPROVAL	GK

Project: DUBLIN WASTE TO ENERGY PROJECT

Title: SEAN MOORE ROAD/ BEACH ROAD/ CHURCH AVE. JUNCTION

Drawn by:	M.M.	Job No:	MDE0133
Checked by:	T.E.	File No:	MDE0133FIG00F4
Approved by:	G.K.	Drg. No:	F.4
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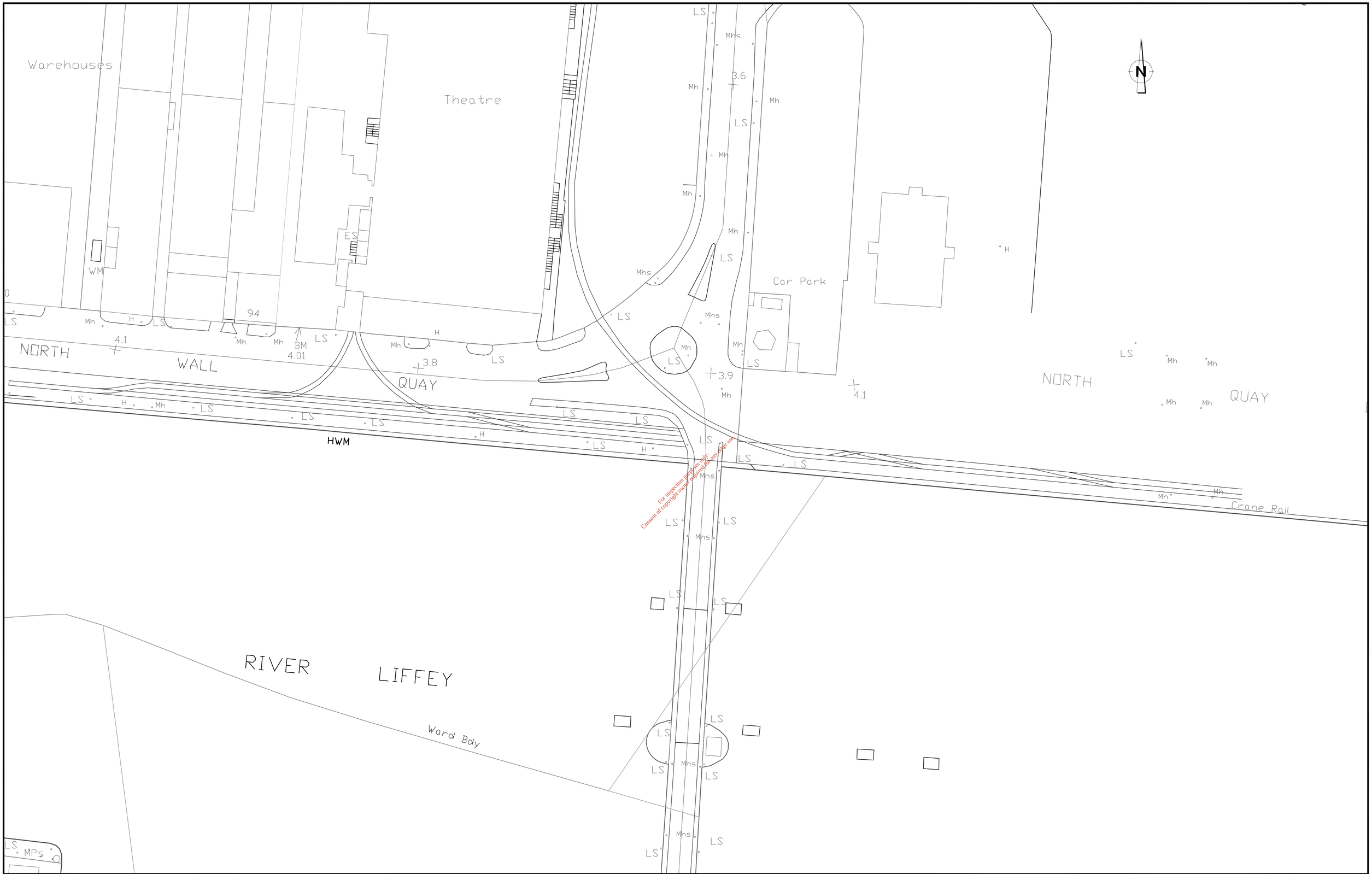
Date:	Apr.'04		



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No.	Date	DR / CK	Amendment / Issue	App.
A01	Apr.'04	MM / TE	ISSUE FOR APPROVAL	GK

Project: DUBLIN WASTE TO ENERGY PROJECT

Title: EASTWALL ROAD/ NORTHWALL QUAY ROUNDABOUT

Drawn by:	M.M.	Job No:	MDE0133
Checked by:	T.E.	File No:	MDE0133FIG00F5
Approved by:	G.K.	Drg. No:	F.5
Scale:	1:500@A1	Rev:	A01
Date:	Apr.'04		