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INDAVER
IRELAND

ENVIRONMENTAL PROTECTION AGENCY WASTE LICENSING
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INITIALS.................

Administration
Waste Management Licensing
Environmental Protection Agency
PO Box 3000
Johnstown Castle Estate
Co. Wexford

19th July 2003

Waste Licence Application 167- 1

Dear Sir/ Madam,

The attached information is being submitted following a request by the Agency on the 20th June 2003 in accordance with Article 14(2)(b)(ii) of the Waste Management (Licensing) Regulations.

Yours sincerely

Laura Burke
Project Manager

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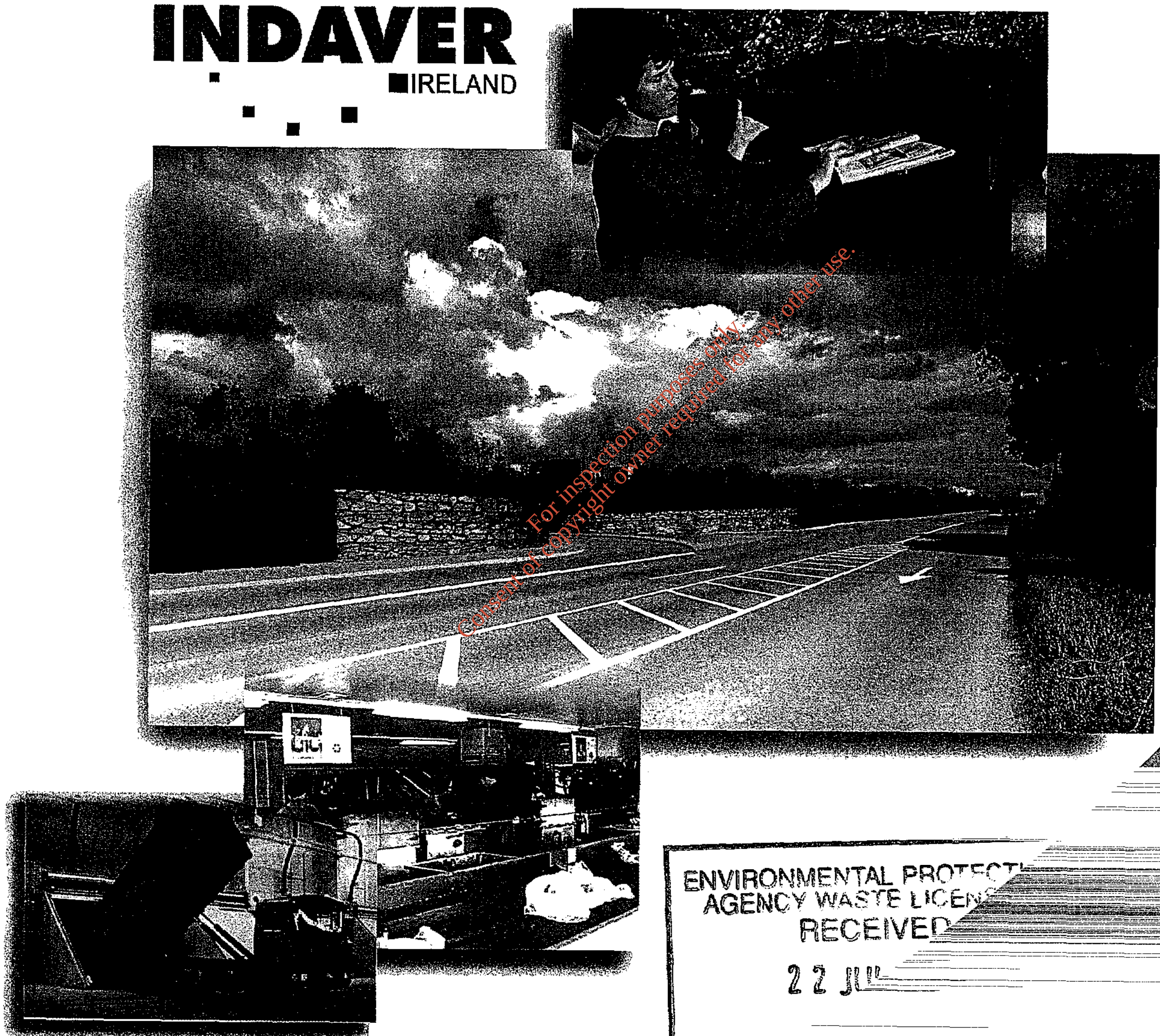
Carranstown Waste Management Facility

Waste Licence Application

Response in Accordance with Article 14 (2)(b)(ii) of Waste Management (Licensing) Regulations

Article 12 Compliance; July 2003

INDAVER IRELAND



INDAVER IRELAND

Indaver Ireland
Waste Management Facility, Carranstown, Duleek, Co. Meath.
(Waste Licence Reference 167-1)

Response to Notice in accordance with Article 14(2)(b)(ii) of the Waste Management (Licensing) Regulations

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Article 12 Compliance Requirements

Waste to Energy Plant

1. EPA Request States

Regarding your Article 12 response received 07/05/03 in relation to the Waste to Energy plant and requirements of best available techniques (BAT), no reference has been made to flue gas re-circulation. Clarify if you propose to use flue gas re-circulation and if not clarify why not.

Response

It is standard practice not to use flue-gas re-circulation in modern incinerators, which handle municipal wastes.

The reduction of NOx emissions achieved in older incinerators where flue gas re-circulation has been retrofitted is already achieved in the modern plants by a combination of actions that minimise the production of NOx in the furnaces at the outset and which then treat the NOx actually produced.

Fitting flue gas re-circulation to the Carranstown plant would not result in lower NOx emissions and so it is not intended to re-circulate the flue gas in the present design.

NOx production at Carranstown will be minimised through design and operational measures that include;

- Controlling the rate of the use of a primary air stream beneath the waste within the furnace
- the introduction of a secondary forced air stream above the waste within the furnace and optimising the distribution of the primary and secondary air streams.
- maintaining the oxygen concentration level not too high (6-9%)
- maintaining the temperature within the furnace at 900°C compared to the minimum burning temperature of 850°C, and keeping a uniform temperature profile within the furnace (at higher temperatures NOx production is greater)
- use of a low NOx burner which has a staged air supply to the waste.

It is the ratio and distribution of the primary and secondary air streams within the furnace together with the 900°C temperature that minimises NOx production. Re-circulating the flue gas, which would take place after the Bag House would require higher furnace temperatures to compensate for the introduction of the cooler flue gases for no net reduction in NOx production. The optimum conditions within the furnace to reduce NOx formation are 900°C and 6-9% O_2. This is achieved in the design of the furnace, without the use of flue gas recirculation.

2. EPA Request States

Provide an assessment of the potential impact of small particulate (PM2.5) which will be emitted from the stack.

Response

Air Quality Impact Assessment for $PM_{2.5}$

EU legislation in relation to particulates is currently referenced to PM_{10} which is defined as particulate matter which passes through a size-selective inlet with a 50% efficiency cut-off at 10 µm aerodynamic diameter (Council Directive 1999/30/EC). No EU air quality standard currently exists for $PM_{2.5}$. In Council Directive 1999/30/EC, Article 5 (2) states that "Member States shall ensure that measuring stations to supply data on concentrations of $PM_{2.5}$ are installed and operated. Each Member State shall choose the number and the siting of the stations at which $PM_{2.5}$ is to be measured as representative of concentrations of $PM_{2.5}$ within that Member State". It also states that by no later than 31/12/03, "the Commission will give particular attention to setting limit values for $PM_{2.5}$ or different fractions of particulate matter as appropriate". However, to date, no $PM_{2.5}$ limit value has been set.

In S.I. 271 of 2002, which transposes Council Directive 1999/30/EC into Irish Law, in a section dealing with Air Quality Management Plans (Section 16), states that an air quality management plan shall, *inter alia*, "(g) aim at reducing concentrations of $PM_{2.5}$ where measures are necessary to ensure compliance with the indicative action level specified in Schedule 3 of PM_{10}" (see Table 1). However, again, no air quality standard has been set for $PM_{2.5}$ in Irish Law.

In relation to the WHO, the current Guidelines for Air Quality (2000) state that, in relation to particulates, that no specific guideline value is proposed as it is felt that a threshold cannot be identified below which no adverse effects on health occurs[(1)]. However a recent publication from the WHO[(2)] has stated that air quality guidelines for $PM_{2.5}$ be further developed. However, again, no air quality limit value for $PM_{2.5}$ has been set by the WHO, at this stage.

In the USA, the National Ambient Air Quality Standards (NAAQS) include a standard for $PM_{2.5}$ in addition to PM_{10}. The relevant standard is set out in Table 2. The standard is expressed both as an annual average, averaged over three years, and as a 24-hour standard expressed a 98^{th}%ile again averaged over three years. In the absence of any other applicable standards by the EU or WHO, the USEPA NAAQS for $PM_{2.5}$ has been applied in the current assessment.

Table 1: S.I. 271 of 2002 - Schedule 3, Stage 2 (2010) Particulate Matter (PM_{10})

Pollutant	Regulation	Limit Type	Margin of Tolerance	Value
PM_{10}	SI 271 of 2002	Annual limit for protection of human health	50% from 01/01/05 reducing linearly to 0% by 2010	20 µg/m^3
		24-hour limit (on a rolling basis) for protection of human health not to be exceeded more than 7 times per annum	Not to be exceeded more than 28 time by 01/01/06, 21 times by 01/01/07, 14 times by 01/01/08, 7 times by 01/01/09 and zero times by 01/01/20	50 mg/m^3

Table 2: US National Ambient Air Quality Standards (NAAQS) & PSD Increments for $PM_{2.5}$

Pollutant	Averaging Period	Primary & Secondary Standard(1) (µg/m^3)	PSD Increment Class II(2,3) (µg/m^3)
$PM_{2.5}$	Annual – Average over 3 years	15	5
	24-Hour – as a 98^{th}%ile over 3 years	65	13

(1) Primary standards to protect public health whilst secondary standards are set to protect public welfare.

(2) Class I areas are national parks and similar areas. Class II are all areas not originally classified as Class I.

(3) PSD and Significant Emission Rates have not yet been established for $PM_{2.5}$. The relative PSD rate for PM_{10} has been applied instead.

Emissions of $PM_{2.5}$ have been modelled using the ISCST3 dispersion model which has been developed by the U.S. Environmental Protection Agency (USEPA)(3). The model is a steady-state Gaussian plume model used to assess pollutant concentrations associated with industrial sources. The model has been designated the regulatory model by the USEPA for modelling emissions from industrial sources in both flat and rolling terrain(4).

$PM_{2.5}$ modelling results indicate that the ambient ground level concentrations are below the relevant air quality standards (NAAQS) for $PM_{2.5}$ under maximum operation of the site and assuming, conservatively, that all particles emitted from the site will be in the form of $PM_{2.5}$ (see Table 3). Thus, no adverse environmental impact is envisaged to occur under these conditions at or beyond the site boundary. Emissions at maximum operations equate to ambient $PM_{2.5}$ concentrations (including background concentrations) which are 20% of the maximum ambient 24-hour limit value (measured as a 98^{th}%ile) and 70% of the annual average limit value at the worst-case boundary receptor.

Table 3 : Dispersion Model Results – Total Dust (referenced to $PM_{2.5}$)

Pollutant / Scenario	Annual Mean Background (μg/m^3)	Averaging Period	Process Contribution (μg/m^3)	Predicted Emission Concentration (μg/Nm^3)	Standard[(2)] (μg/Nm^3)
$PM_{2.5}$ / Maximum	10[(1)]	98^{th}%ile of 24-hr means	2.9	12.9	65
		Annual mean	0.51	10.5	15

(1) Annual background assuming that 50% of background PM_{10} is composed of $PM_{2.5}$. Data from Cork City 2002 indicates that $PM_{2.5}$ accounted for 46% of the PM_{10} total in 2002 (Air Pollution In Cork City 2002 Report).

(2) USEPA NAAQS

Cumulative Impact Assessment for $PM_{2.5}$

The cumulative impact of particulates has been assessed in Tables 4 and 5 assuming, as a worst-case, that particulates emitted by Indaver Ireland Ltd and Platin Cement Ltd are emitted wholly as $PM_{2.5}$. Each individual source has been modelled both separately and as part of the cumulative assessment. Emission data for the sources used in the cumulative assessment is detailed in Tables 6-7.

The guidance for assessing cumulative impacts includes assessing everywhere off-site, including within the site boundary of all nearby sources[(5)]. Thus, the results outlined in this section, in regard to emissions from nearby sources, may apply to areas on-site within each source (and thus will not fall under the domain of ambient legislation) and will also most likely overestimate the impact of these sources in the surrounding environment.

The impact of nearby sources has been examined where interactions between the plume of the point source under consideration and those of nearby sources may occur. These locations were:

1) the area of maximum impact of the point source,
2) the area of maximum impact of nearby sources,
3) the area where all sources combine to cause maximum impact[5].

The project's impact area is the geographical area for which the required air quality analysis for PSD increments are carried out. The USEPA has defined the "impact area" as a circular area with a radius extending from the source to the most distant point where dispersion modelling predicts a significant ambient impact will occur irrespective of pockets of insignificant impact occurring within it. Within this impact area, all nearby sources should be modelled, where "nearby" is defined as any point source expected to cause a significant concentration gradient in the vicinity of the proposed new source.

In order to determine compliance, the predicted ground level concentration (based on the full impact analysis and existing air quality data) at each model receptor is compared to the applicable ambient air quality limit value or PSD increment. If the predicted pollutant concentration increase over the baseline concentration is below the applicable increment, and the predicted total ground level concentrations are below the ambient air quality standards, then the applicant has successfully demonstrated compliance.

When an air quality standard or PSD increment is predicted to be exceeded at one or more receptors in the impact area, it should be determined whether the net emissions increase from the proposed source will result in a significant ambient impact at the point of each violation, and at the time the violation is predicted to occur. The source will not be considered to cause or contribute to the violation if its own impact is not significant at any violating receptor at the time of each violation. In relation to nearby sources, Platin Cement is the only significant nearby source of particulates. Modelling of particulate emissions from Marathon Power was not deemed necessary as the facility will be gas-fired and thus will not be a significant source of $PM_{2.5}$.

In the area of the maximum impact of Indaver Ireland (Grid Co-ordinate 306500, 271100), the impact from Platin Cement was minor (see Table 4). In relation to the 98^{th}%ile of 24-hour concentrations, the Platin Cement $PM_{2.5}$ impact at this point was 12% of the limit value in the absence of Indaver Ireland. In the presence of Indaver Ireland, the assessment indicated that there is no significant cumulative impact, with concentrations remaining at 12% of the $PM_{2.5}$ limit value at this point (excluding background concentration).

The annual average cumulative assessment was likewise minor at the area of the maximum impact of Indaver Ireland (Grid Co-ordinate 306500, 271100) (see Table 4). The overall impact leads to an increase of 5% in the annual average levels leading to a cumulative level of 8% of the limit value (excluding background concentration).

In the area of the maximum impact of Platin Cement, the impact from Indaver Ireland was very small (see Table 5). In relation to the 98th%ile of 24-hour concentrations, the impact of Indaver Ireland at the point of maximum impact of Platin Cement was less than 1% of the limit value (excluding background concentration).

The annual average cumulative assessment was likewise minor at the area of the maximum impact of Platin Cement (see Table 5). The impact of Indaver Ireland at the point of maximum impact of Platin Cement was less than 1% of the annual limit value (excluding background concentration).

Table 4: Platin Cement's Impact At Indaver Ireland's Maximum Location

Scenario	Platin Cement's Impact At Indaver Ireland's Maximum(1)	Significance Criteria	Cumulative Impact of Indaver Ireland & Platin Cement	Limit Value(1)
98th%ile of 24-hour Averages	7.83 (306500, 271100)	13(2)	17.8 (306500, 271100)	65
Annual Average	0.68 (306500, 271100)	5(3)	11.2 (306500, 271100)	15

(1) Excluding background concentration

(2) Directive 1999/30/EC

(3) PSD Increment for $PM_{2.5}$ applicable in the current application

Note: Grid co-ordinates are National Grid co-ordinates and refer to the location of local maximum

Table 5: Indaver Ireland's Impact At Platin Cement's Maximum Location

Scenario	Indaver Ireland's Impact At Platin Cement	Significance Criteria
98th%ile of 24-hour Averages	0.51 (306300, 271900)	13(2)
Annual Average	0.051 (306300, 271900)	5(2)

(4) Directive 1999/30/EC

(5) PSD Increment for $PM_{2.5}$ applicable in the current application.

Note: Grid co-ordinates are National Grid co-ordinates and refer to the location of local maximum

Table 6: Source Emission Data for Emissions from Indaver Ireland used for Cumulative Assessment

Stack Reference	Stack Height (m)	Exit Diameter (m)	Cross-Sectional Area (m^2)	Temperature (K)	Max Volume Flow (Nm^3/hr)	Exit Velocity (m/sec actual)	Concentration (mg/Nm^3)	Mass Emission (g/s)
Maximum	40	2.0	3.14	373	150,980	20.5	$PM_{2.5}$ – 10	$PM_{2.5}$ – 0.42

Table 7: Source Emission Data For Emissions from Platin Cement used for Cumulative Assessment (1)

Stack Reference	Stack Height (m)	Exit Diameter (m)	Cross-Sectional Area (m^2)	Temperature (K)	Max Volume Flow (Nm^3/hr)	Exit Velocity (m/sec actual)	Concentration (mg/Nm^3) (2)	Mass Emission (g/s) (2)
Kiln 1	106.7	2.3	4.15	513	96,000	12.1	$PM_{2.5}$ – 120	$PM_{2.5}$ – 3.2
Kiln 2	103.3	3.7	10.8	397	299,000	11.2	$PM_{2.5}$ – 120	$PM_{2.5}$ – 0.42
Raw Mill 1	32	1.20	1.13	305	62,000	17.0	$PM_{2.5}$ – 100	$PM_{2.5}$ – 1.72
Coal Mill 1	30	0.71	0.40	303	12,000	9.34	$PM_{2.5}$ – 100	$PM_{2.5}$ – 0.33
Coal Mill 2	45	1.00	0.79	319	31,000	12.8	$PM_{2.5}$ – 100	$PM_{2.5}$ – 0.86
Cement Mill 1	30	0.71	0.40	302	14,500	11.3	$PM_{2.5}$ – 100	$PM_{2.5}$ – 0.40
Cement Mill 2	30	0.96	0.72	303	24,000	10.2	$PM_{2.5}$ – 100	$PM_{2.5}$ – 0.67
Cement Mill 3	30	0.96	0.72	303	24,000	10.2	$PM_{2.5}$ – 100	$PM_{2.5}$ – 0.67
Cement Mill 2 Sep	29	2.00	3.14	299	143,000	13.8	$PM_{2.5}$ – 50	$PM_{2.5}$ – 1.99

(1) Taken from EIS for the site, and also IPC Licence No.268

(2) Concentrations and mass emissions based on IPC Licence No. 268 which refers to Total Particulates. As a worst case, all particulates are assumed to be in the form of $PM_{2.5}$ for the present assessment.

Sewerage and Surface Water Infrastructure

3. EPA Request States

Provide details on storage capacity, which in accordance with Article 8 of Directive 2000/76/EC on the incineration of waste shall be provided for contaminated rainwater run-off from the incineration plant site or for contaminated water arising from spillage or fire fighting operations.

Response

Section 9.4.1 of the EIS and Attachment D.1 of the Waste Licence Application outlines how the run-off from the hard surfaced areas and building roofs will continually drain via two petrol interceptors into a 1,500m^3 storage tank located beneath the main building complex. The water stored in this tank will provide the primary feed water to the incinerator and therefore there will be no discharge of surface water from the development site.

It is proposed to use the captured run-off as the primary feed water to the plant in combination with an on-site groundwater supply. It is planned to maintain the greater part of the 1,500m^3 storage tank available at all times for site run-off. Under these operating conditions the storage will be capable of accommodating all the run-off from storms up to and including a 5-year return period.

In wetter periods it is planned to allow the excess water to be diverted to the ground water storage tank where there is a further 700m^3 of water storage available. This approach allows for the retention of the rainwater predicted in the 20 year 24 hour storm.

In extreme weather conditions the excess surface water will be allowed to discharge to the drainage network from the storage tanks and ultimately into the Nanny River.

With regard to any potential spillages, all chemicals or other potentially polluting substances will be stored within the main process building and will be provided with adequate containment. Any contaminated run-off resulting from spillages on the hard surfaced areas of the plant will be directed to the water storage tank and will become the feed water to the plant.

The greatest potential for fire at the facility arises within the 12,000m^3 waste bunker where localised heating can occur due to decomposition of organic material. As detailed in Attachment F4.1 of the Waste Licence Application, localised fires within the waste bunker are lifted using the grab crane, into the hoppers which transfer the waste directly to the furnace. Should an uncontrollable fire occur, water cannons will be used to suppress the fire. The waste bunker will be designed as a water retaining structures and will thus containing any fire water generated within the bunker. The waste bunker will be integrity tested during construction. Details on the typical construction of the bunker are attached in Appendix 1.

Contaminated run-off resulting from all other fire fighting operations at the facility will be accommodated in the 1,500m^3 storage tank and the 500m^3 recovery water tank. This water will be suitable for use as feedwater to the incinerator

Should fire fighting operations take place during a storm event, contaminated runoff may also be accomodated in the 1,300m^3 fire water storage tank. In the event of a fire, as water is drawn from the firewater storage tank, the contaminated run-off from firefighting operations will be re-circulated back into the fire water storage tank.

4. EPA Request States

In relation to solid waste residues generated from the incineration plant provide details on any drainage and bunding arrangements

Response

The solid wastes generated by the incinerator plant will consist of;

- bottom ash
- boiler ash
- flue gas cleaning residue
- gypsum

The boiler ash and the flue gas cleaning residue will be stored in silos and the gypsum waste will be stored in a suitably enclosed skip/container as detailed in Section 2.4.7 of the EIS and Attachment H.11.1 of the Waste Licence Application.

The bottom ash will be stored in a 1,600m^3 concrete storage bunker, which will be designed as a water retaining structures and will be integrity tested during construction.

As stated above, all surface water drainage from the development site will be retained as process water. In the unlikely event of any spillage from the waste silos and skips will be retained within the site drainage and channelled to the surface water 1,500m^3 storage tank located below the main building complex.

5. EPA Request States

Regarding the wheel wash, which you propose to provide during facility construction, provide details of drainage arrangements.

Response

It is proposed that a wheel wash be installed during facility construction as a control mechanism for the reduction of suspended solids within surface water discharges. The discharge from the wheel wash will be directed to the proposed settlement channels. The channels will work on the basis of reducing the velocity of the water instigating gravitational settlement of the suspended solids. The final 10-15m length of the channels will also incorporate additional filter material. The settlement channels will be regularly inspected and subsequently desilted by the site contractor. The discharge from the settlement channel will be directed through an oil interceptor prior to discharge to the drainage network.

6. EPA Request States

Clarify if it is proposed to remove any wastewater off-site, during construction or operation, to a sanitary authority. If so provide details.

Response

Wastewater will only be removed offsite during the construction phase as detailed in Section 2.6.3 and 9.3 of the EIS and Attachment H.6.1 of the Waste Licence Application. During the construction phase all domestic effluent generated on site will discharge to temporary sewage containment facilities prior to transport and treatment off site. Meath County Council have confirmed their agreement to accept domestic effluent generated during construction of the facility for treatment in an appropriate wastewater treatment plant. See Appendix 2.

7. EPA Request States

Clarify if the facility will impact water quality in the River Nanny. Provide details and include copies of any relevant Water Quality Management Plans.

Response

There will be no discharge to the Nanny River under normal operating conditions and so there will be no impact on the quality of the Nanny River during these times.

It is possible that in periods of exceptionally high rainfall that it may be appropriate to allow the excess run-off to drain to the Nanny River. In these circumstances the run-off will be free of contamination and will not impact on the River Nanny which itself will be in flood conditions.

As the Nanny River is considered a major tributary of the River Boyne, reference was made to the River Boyne Water Quality Management Plan (1997) and the Three Rivers Project, Water Quality Monitoring and Management (2002), however as there will be no discharge to the River Nanny during normal operating conditions, there will be no impact on regional water quality management plans.

The potential impacts of the proposed development on quality during the construction and operational phases have been discussed in items 9.3 and 9.4 of the EIS and H.9.1 of the Waste Licence Application. Mitigation measures to ameliorate this potential impact are also proposed in items 9.3 and 9.4 of the EIS and H.9.1 of the Waste Licence Application. Mitigation measures briefly comprise the following:

Construction Phase

- All oils, chemicals, paints or other potentially polluting substances used during construction will be stored in designated storage areas which will be bunded to a volume of 110% capacity of the largest tank/container within the bunded area(s).
- Filling and draw-off points will be fully located within the bunded area(s).
- Drainage for the bunded area(s) will be diverted for collection and safe disposal.
- All domestic effluent generated on site will be discharged to temporary sewage containment facilities prior to transport and treatment off site.
- Silt traps and settlement channels will be installed on site to prevent wash out of silt or mud into the ditch, which drains to the River Nanny.
- A wheel wash will be installed on site, which will discharge to the silt traps and settlement channels.

Operational Phase

- No trade effluent will be generated on site.
- All domestic effluent will be treatment by an appropriate system prior to discharge to the percolation area.
- All chemicals or other potentially polluting substances will be stored within the main process building and will be provided with adequate containment.
- Petrol interceptors will be placed on the surface water drainage lines from hardstanding areas to contain any leakages from vehicles on site.

With these mitigation measures employed the impact on local surface waters from the proposed development facility either during the construction or operational phases will be insignificant.

Proposed Quantity and Nature of Waste

8. EPA Request States

In relation to the waste to energy plant, provide details on the proposed quantities of the waste types listed in Attachment E of the Application. Details should also be provided on waste handling/storage arrangements and introduction of the waste to the incinerator if it differs from that already contained in the application. Based on the quantities proposed provide confirmation, including references, that the proposed incineration plant can deal with such a mix of waste (reference was made in your Article 12 reply received 07/05/03 that ' a grate incinerator is capable of accepting up to 10% sludges in the incoming waste stream') and provide details on similar incineration plants which accept such a mix of waste.

Response

The North East Waste Management Plan proposes thermal treatment to be an integral part of the management of the Region's waste. The NE Plan proposes the construction of a thermal treatment plant with a nominal capacity of 200,000 – 300,000 tonnes per annum. The 2014 waste stream targets for thermal treatment within the region are outlined in Table 8 below.

Table 8: NE Waste Management Plan Waste Stream Targets for 2014 Assuming Thermal Treatment in Place

Source	NE Waste Management Plan Waste Stream targets for 2014*
Household	174,714
Commercial	
Industrial	37,163
Total	**211,877**

*Scenario 3 as outlined in Table 2 (Waste Stream Targets for 2014) of NE Waste Management Plan.

Proposed quantities of the waste types listed in Attachment E of the Application for the waste to energy plant will ultimately be a ratio/percentage of waste streams currently arising in the region as detailed in the Waste Management Plan for the North East. Such waste quantities are detailed in Table 9 below.

Table 9: Quantities of Waste Types Arising in NE Region

Waste Types	Amount in Tonnes per Year*
Household	104,807
Commercial	69,588
Industrial	116,527
Litter/Street Sweepings	7,482
Healthcare (non risk)	1,783
Water treatment sludges	1,029
Waste water treatment sludges	2,005
Industrial sludges	18,598
Total	**321,819**

* Table 1 (Quantities of Waste Arising in North East Region) of NE Waste Management Plan.

Exact quantities of waste types to be treated are impossible to predict. Accurate figures will be furnished to the EPA during the operational phase of the development when representative records will be available.

Waste acceptance and handling procedures for the proposed facility are detailed in Sections 2.3 and 2.4 of the EIS and Attachments E.3 and E.4 of the Waste Licence Application. Waste handling/storage arrangements and the introduction of the waste to the incinerator does not differ from that already contained in the application.

Co-combustion of sludges on grate furnaces is done in a number of incineration plants throughout Europe, including:

- The Indaver facility at Beveren, Flanders which is a comparable incineration plant that accepts a similar mix of waste. The Beveren facility currently operates at 350,000 tonnes per annum and accepts waste water sludges as proposed for Carranstown
- MHKW, Bamberg, Germany
- ZAW, Coburg, Germany
- KVA, Horgen, Switzerland
- Vestverbraending, Vestkraft, Denmark
- UIOM, Bordaux Cenon, France
- UIOM, Toulouse, France

Groundwater

9. EPA Request States

Clarify if groundwater abstraction will have any impact on any local wells, the River Nanny or Duleek Commons.

Response

The groundwater abstraction at the incinerator plant will be drawn from the regional limestone aquifer in which the nearby Platin Quarry is located. The impacts on the water table resulting from the incinerator plant will be superimposed on, but not add to, those already associated with the dewatering of the Platin quarry.

The water usage is calculated to be 360m^3/day of which 24m^3/day will be supplied by Meath County Council for potable water. It is proposed to use groundwater to supplement the water supply to the plant when the supply of rainwater run-off is insufficient to meet the remaining daily requirement of feed water of 336m^3/day. Under these circumstances, the groundwater abstraction will generally be below the 336m^3/day as the average monthly rainfall exceeds evapo-transpiration in 8 of the 12 months throughout the year. Therefore, the groundwater abstraction is likely to be at 336m^3/day for only short periods, possibly 2-3 weeks at a time in the drier summer months and for a week at a time in the rest of the year. Over the rest of the time the abstraction rate is likely to average some 300m^3/day.

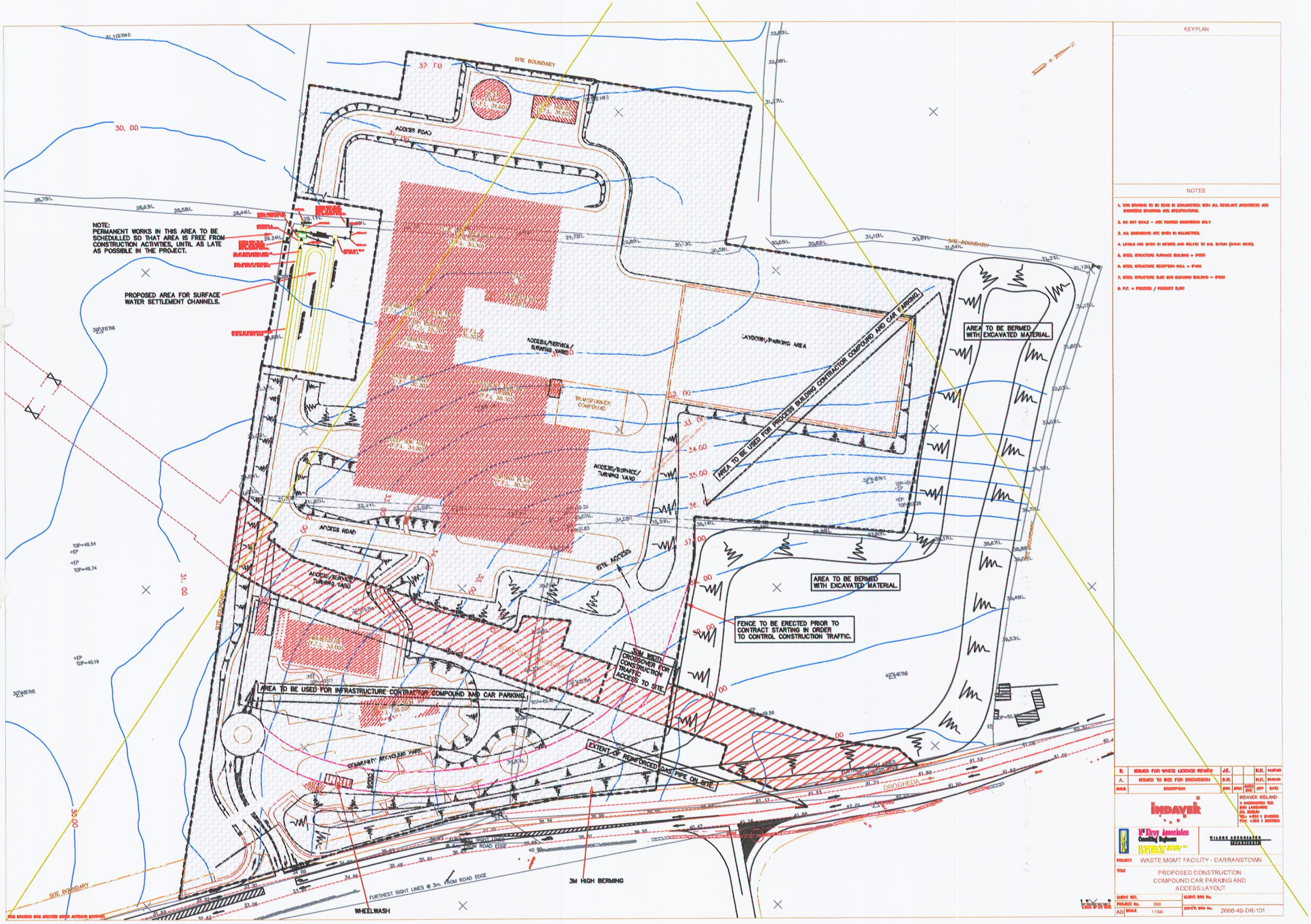
A continuous groundwater abstraction of 300m^3/day is small in the context of the capacity of the underlying regional aquifer and would not therefore in itself impact on surrounding wells, the River Nanny or Duleek Commons.

The incinerator abstraction is also insignificant in the context of the dewatering rate already in place at nearby Platin Quarry, which is now measured at 3,000 m^3/day. This abstraction is not having any impact on the flows in the River Nanny or the groundwater regime at Duleek Commons. A monitoring programme is in place with respect to the surrounding domestic wells.

It is likely that the Platin abstraction rate will decrease by a similar amount as the incinerator abstraction will be removing some of the groundwater that would be required to be pumped at the quarry to maintain dry working conditions. In this scenario, the groundwater abstraction at the incinerator plant will not be adding to the impact on the water table already in place as a result of the Platin dewatering programme.

Appendix 1

Proposed Construction Compound Car Parking and Access Layout



KEYPLAN
SITE BOUNDARY
ACCESS ROAD
NOTE:
PERMANENT WORKS IN THIS AREA TO BE SCHEDULLED SO THAT AREA IS FREE FROM CONSTRUCTION ACTIVITIES, UNTIL AS LATE AS POSSIBLE IN THE PROJECT.
PROPOSED AREA FOR SURFACE WATER SETTLEMENT CHANNELS.
ACCESS/SERVICE/TURNING YARD
LAYDOWN/PARKING AREA
AREA TO BE USED FOR PROCESS BUILDING CONTRACTOR COMPOUND AND CAR PARKING.
AREA TO BE BERMED WITH EXCAVATED MATERIAL.
TRANSFORMER COMPOUND
SITE ACCESS
FENCE TO BE ERECTED PRIOR TO CONTRACT STARTING IN ORDER TO CONTROL CONSTRUCTION TRAFFIC.
3M WIDE CROSSOVER FOR CONSTRUCTION TRAFFIC ACCESS TO SITE.
AREA TO BE USED FOR INFRASTRUCTURE CONTRACTOR COMPOUND AND CAR PARKING.
EXTENT OF REINFORCED GAS PIPE ON SITE.
COMMUNITY RECYCLING PARK
FURTHEST SIGHT LINES @ 3m. FROM ROAD EDGE
WHEELWASH
3M HIGH BERMING
DROGHEDA
30.00
31.00
32.00
33.00
34.00
35.00
36.00
37.00
NOTES
1. THIS DRAWING TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS AND ENGINEERS DRAWINGS AND SPECIFICATIONS.
2. DO NOT SCALE - USE FIGURED DIMENSIONS ONLY
3. ALL DIMENSIONS ARE GIVEN IN MILLIMETRES.
4. LEVELS ARE GIVEN IN METRES AND RELATE TO O.S. DATUM (MALIN HEAD).
8. P.F. = PROCESS / PRODUCT FLOW
B. ISSUED FOR WASTE LICENCE REVIEW
A. ISSUED TO EGE FOR DISCUSSION
ISSUE DESCRIPTION DRN CHD AUTH CHK APP DATE
INDAVER
INDAVER IRELAND
DUN LAOGHAIRE
CO. DUBLIN
McElroy Associates
Consulting Engineers
PROJECT WASTE MGMT FACILITY - CARRANSTOWN
TITLE PROPOSED CONSTRUCTION COMPOUND CAR PARKING AND ACCESS LAYOUT
CLIENT REF.
CLIENT DRG No.
PROJECT No.
A0 SCALE 1:1000
CONT'R DRG No. 2666-48-DR-101

Appendix 2

Letter from Meath County Council Regarding the Disposal of Domestic Type Effluent During the Construction Phase

10th July, 2003

Ms L. Burke,
Indaver Ireland,
Kilakee House,
Tallaght,
Dublin 24

Re: Disposal of Domestic type effluent for construction stage of thermal threatment plant at Carranstown Duleek

Dear Ms Burke,

I refer to your query on the above matter.

Please note that domestic effluent may be tankered to Duleek waste water treatment plant or other such plant as may be determined by the Area Engineer from time to time during the construction stage.

Yours sincerely

John Quinlivan
Area Administrator