NON-TECHNICAL SUMMARY

WASTE LICENCE REVIEW APPLICATION FOR INTENSIFICATION OF WASTE INTAKE AT KNOCKHARLEY LANDFILL, CO. MEATH

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December 2008

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User is Responsible for Checking The Revision Status Of This Document

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Client: Greenstar Ltd

Keywords: Knockharley, landfill, waste licence review application, 400,000 t/a

Abstract: Greenstar is applying to the Environmental Protection Agency for a review of its waste licence (W0146-01) to operate the Knockharley Landfill. The application is for the review of the waste licence to increase the licensed rate of waste acceptance at the site from 200,000 tonnes to 400,000 tonnes per annum for disposal. Save the increase in the volume of waste and an alteration to the landfill phasing sequence, the nature of the activity envisaged is essentially the same as the activity authorised under the existing waste licence. Greenstar has also applied directly to An Bord Pleanála under the provisions of the Strategic Infrastructure Act for planning permission for this proposed development. An environmental impact statement has been prepared in support of both applications. This document comprises the non-technical summary.

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PREAMBLE

The contents of an application for a waste licence or the review of a waste licence are prescribed by law in the Waste Management (Licensing) Regulations 2004 (S.I. No. 395 of 2004).

Article 12 (1)(u) of the Regulations requires that the applicant prepares a non-technical summary of the information provided. The regulations also prescribe the subject matter to be addressed in the non-technical summary. The information summarised in this document reflects the requirements of the Regulations.

This application is for the review of the existing waste licence (W0146-01) for Knockharley landfill. The existing licence, issued on March 19th 2003, permits the acceptance of 200,000 tonnes per annum of waste for disposal and recovery. The site also has planning permission which restricts the quantity for disposal to 132,000 tonnes per annum until the end of 2010, reducing to 88,000 tonnes per annum thereafter.

The application is for the review of the waste licence to increase the licensed rate of waste acceptance at the site from 200,000 tonnes to 400,000 tonnes per annum for disposal. Save the increase in the volume of waste and an alteration to the landfill phasing sequence, the nature of the activity envisaged is essentially the same as the activity authorised under the existing waste licence. Greenstar has also applied directly to An Bord Pleanála under the provisions of the Strategic Infrastructure Act for planning permission for this proposed development.

As neither application is for an increase in the overall void capacity, an effect of permission (if granted) would be to significantly shorten the life of the facility.

As is required by European and national law, this application is accompanied by an environmental impact statement (EIS).

The full EIS is available for inspection and can be purchased at the offices of

- An Bord Pleanála, 64, Marlborough Street, Dublin 1.
- The offices of Meath County Council, County Hall, Navan, Co. Meath.
- The offices of the EPA, PO Box 3000, Johnstown Castle Estate, Co. Wexford

NON-TECHNICAL SUMMARY OF APPLICATION

The Applicant

Greenstar Holdings Limited (hereinafter 'Greenstar') is the applicant. Contact details for Greenstar are as follows;.

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Greenstar Holdings Limited
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Burton Hall Drive
Sandyford
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The Planning Authority

Meath County Council is the local planning authority however, as prescribed by law, the application for planning permission has been made directly to An Bord Pleanála in accordance with the provisions of the Planning and Development (Strategic Infrastructure Act) 2006., as the proposed development was determined to be strategic development by An Bord Pleanála.

Sewer Discharges

There are no existing or proposed discharges of trade effluent to the sewers. 'Leachate' is the term given to the polluted water that arises when rainwater percolates through the landfilled waste. The landfill is lined, thus the leachate is captured and prevented from discharging to the groundwater. The leachate is pumped on a daily basis to storage before being transported in a road-tanker to an off-site waste water treatment plant.

The Facility Location

The location of the facility is indicated on Drawing WL-A02. Its address is:

- Knockharley Landfill
  Knockharley
  County Meath
  (includes townlands of Tuiterath and Flemingstown).

The facility's National Grid reference is 2975E, 2670N

Knockharley Residual Landfill Project
Location of Activity

Figure: WLA 02 | Job No. CE04480 | Date. Dec. 2008
Finalised By - D McD

White Young Green

For Illustrative purposes only.

JF(8)

Description of Proposal

The facility is located on a 135.2 hectare (333 acre) site as presented in Drawing WLA07. The permitted landfill footprint (this term refers to the waste body) is positioned approximately in the centre of the landholding and the current licence permits the development of approximately 25 ha of landfill footprint.

This application proposes to increase the rate of waste deposition to 400,000 tonnes per annum from 2009, and to develop a second active waste deposition area at the northern end of the footprint (moving south). It is not proposed to increase the permitted total quantity of waste to be deposited in the landfill, or to extend the landfill footprint.

The proposed increased rate of waste acceptance entails the filling of the landfill void more rapidly than the current permitted rates thereby enabling earlier closure ad commencement of landfill aftercare. The separate disposal of stabilised waste and other wastes suited for disposal separately to biodegradable waste is also proposed. In operational terms, residual municipal waste will continue to be deposited at the south end of the active void working north. Stabilised wastes will be deposited in a second working face at the north end of the landfill starting at Phase 7 and working south. Both ends of the active void will be worked towards the centre of the void with capping and screening occurring on a phased basis. This second working face is consistent with the company's objective to have proper regard to the protection of the amenity of adjoining property including residential property. It is also consistent with contemporary scientific advice.

The facility was designed, constructed and is being operated in accordance with the EU Landfill Directive. Of particular concern is compliance with the Council Directive 1999/31/EC on the Landfill of Waste.

The Directive sets down criteria with respect to:

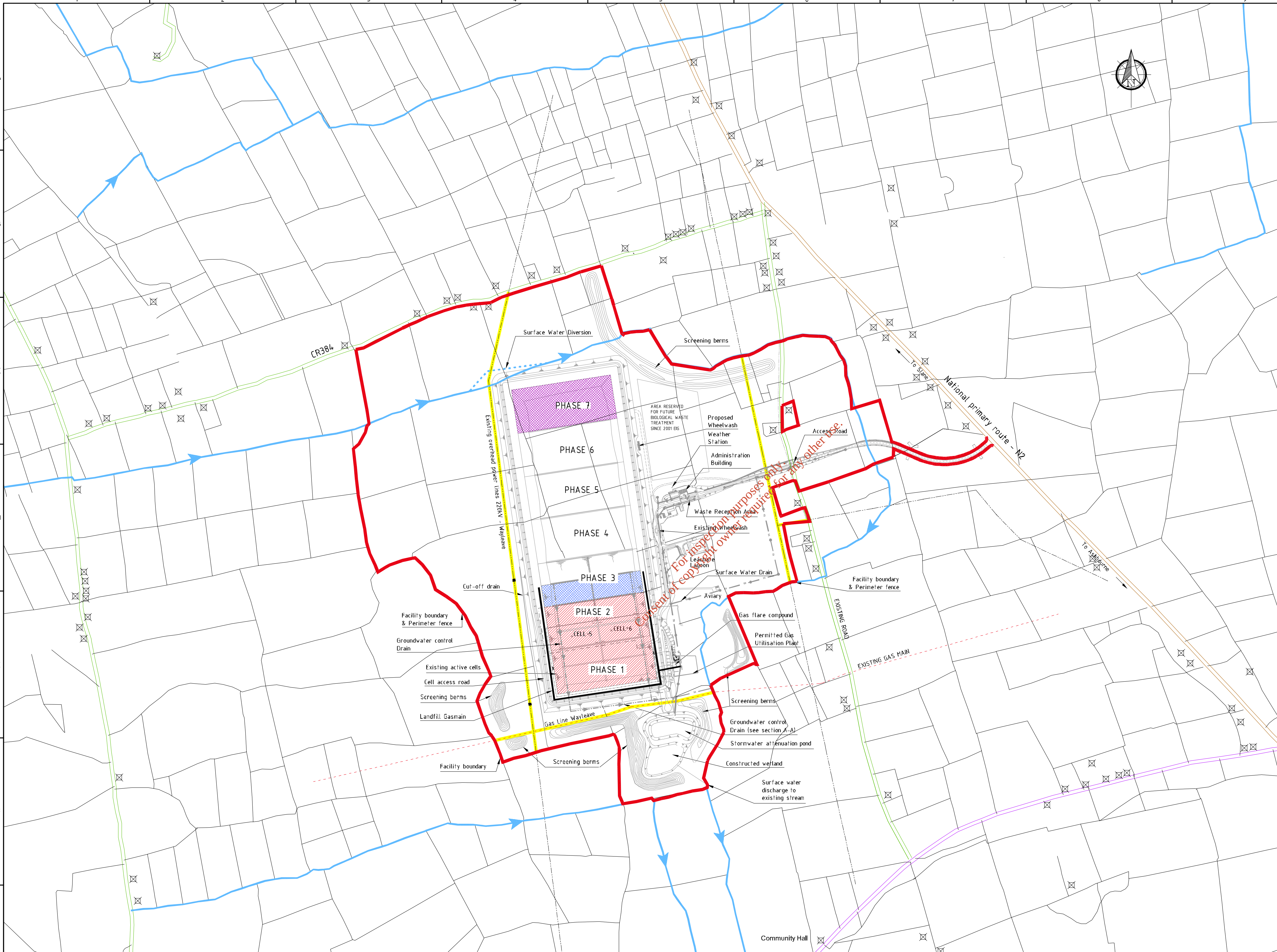
- **Location**. This application does not alter the location or extent of the facility.

- **Water Control and Leachate Management.** The existing water control and leachate management arrangements will remain in place and are adequate to deal with the proposal

- **Protection of Soil and Water.** The fundamental protection is provided by the lining system under the waste. This has been and will continue to be installed under strict quality control and comprises 1 m layer of low-permeability soil together with an artificial liner. A layer of drainage material is placed over the artificial liner that serves both to protect the liner and to efficiently drain the leachate that accumulates up at the base of the landfill.

- **Landfill Gas Control.** Gas cannot seep through the landfill lining system. Landfill gas arises as waste decomposes. As soon as practicable, the landfill is capped (either temporary or permanent) and the trapped gas is routed to a flare. The flare combusts the gas rendering it harmless. In the near future the landfill gas will be utilised as a fuel in a gas-engine that will be used to drive an electricity generator. In addition to the gas flare, there is a network of gas detection monitoring boreholes around the landfill. No evidence of gas migration from the landfill has been detected in the monitoring boreholes.

Sheet FTC-A1-2006 rev. C (template filed in O:\Acad\Templates\Autocad) (May 2007) - template externally referenced



SITE PLAN

Scale 1:10560

Scale 1:10560

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2440,2441,2442,2508,2509,2510,2577A,2577B,2578A,2578B,2579A

NOT FOR CONSTRUCTION UNLESS SPECIFICALLY STATED OTHERWISE

Legend

- National Primary Routes
- National Regional Routes
- National County Routes
- Application Site Boundary
- Constructed Area
- Area currently Being filled
- Proposed Filling Area
- Existing Water Courses
- Neighbouring Houses
- Overhead Powerlines
- Underground Gas Mains
- Wayleaves

Rev.	Drawn	Chk'd	App'd	Rev Origin / Date	Description
A	JC	SMcA	DO'S	Cork 22.12.08	ISSUE FOR REVISION OF WASTE LICENCE

Revision History A

Name of Client

greenstar

Name of Job

KNOCKHARLEY RESIDUAL LANDFILL SITE

Title of Drawing

SITE INFASTRUCTURE

Scales Used 1:10560

This Drawing was printed to A3

Dwg. No. CE07-172-02-FIG-WLA07

Rev. A

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ORIGINAL DRAWING SIZE A1 - (841 x 594)

- **Nuisance and Hazards.** The existing mitigation measures will continue with respect to nuisance control.

  Traffic movement will increase but the existing road infrastructure is capable of handling the traffic safely. When the site was constructed in 2004, a right-turn-lane junction was provided on the N2 as was an underpass to separate local traffic form traffic accessing the site.

- **Stability.** The proposal will not change the side-slopes of the finished waste mound. The side-slopes have been designed for stability. Furthermore, a slope-stability reassessment is undertaken every year.

- **Barriers.** As required by the Directive, the landfill is secured by gates and fences to prevent free access to the site.

Classes of Activity

The Knockharley facility is a landfill for non-hazardous waste. The Regulations define a classification list for waste activities. Tables 1 and 2 list the waste activities for Knockharley Landfill.

Table 1 Relevant Activities in the Third Schedules of the Waste Management Acts 1996 to 2003

THIRD SCHEDULE **Waste Disposal Activities**
1. Deposit on, in or under land (including landfill). This is the primary current waste disposal activity and it will remain so. This activity is further described under Class 5 below.
4. Surface impoundment, including placement of liquid or sludge discards into pits, ponds or lagoons. Leachate is and will continue to be stored in a covered, lined lagoon prior to being either re-circulated or disposed of off site.
5. Specially engineered landfill, including placement into lined discrete cells which are capped and isolated from one another and the environment. (P) This is the principal activity. To date all waste has been disposed of in lined cells. The current proposal is to increase the rate of filling thus lined cells will be developed and filled with waste more rapidly than heretofore.
6. Biological treatment not referred to elsewhere in this Schedule which results in final compounds or mixtures which are disposed of by means of any activity referred to in paragraphs 1 to 5 or paragraphs 7 to 10 of this Schedule. The licensee may, in time, elect to establish a small-scale leachate treatment plant to either augment or replace the current off-site disposal of leachate.
13. Storage prior to submission to any activity referred to in a preceding paragraph of this Schedule Unacceptable waste will continue to be stored in the waste quarantine area pending disposal, treatment or recovery off site.

Table 2 Relevant Activities in the Fourth Schedule of the Waste Management Acts 1996 to 2003

FOURTH SCHEDULE Waste Recovery Activities
2. Recycling or reclamation of organic substances which are not used as solvents (including composting and other biological processes). Compost and other treated organic waste streams used for engineering purposes on the site.
4. Recycling or reclamation of other inorganic materials. Recovered C&D waste is and will continue to be used for engineering purposes such as daily cover or road construction.
9. Use of any waste principally as a fuel or other means to generate energy. Landfill Gas is currently being collected and flared, the licensee proposes to establish gas-fuelled electricity generation as soon as a viable quantity of gas becomes available.
11. Use of waste obtained from any activity referred to in a preceding paragraph of this Schedule. Recovered C&D waste is and will continue to be used for engineering purposes such as daily cover or road construction
13. Storage of waste intended for submission to any activity referred to in a preceding paragraph of this Schedule Again referring to recovered materials to be used for engineering purposes, these will be stockpiled prior to use as needs be.

Quantity and Nature of Waste

The proposed residual waste types comprising the 400,000 tpa include the following;

- Short to medium term disposal of stabilised biowaste from MBT (mechanical biological treatment) processes
- Other stabilised secondary wastes from the processing of non-food-bearing construction, commercial and industrial wastes.
- Soils and rubble and other wastes from the construction industry
- Other residual wastes from the mechanical processing stages of municipal, commercial and industrial waste
- Non-hazardous residual wastes from other waste recovery processes.

It is also proposed to accept up to 10,000 tonnes per annum of construction materials containing asbestos (e.g. water pipes, chimney flues and roof sheeting) (EWC 17 05 06) which are acceptable at non-hazardous landfills for disposal subject to the requirements of Article 6(c)(iii) of the Landfill Directive (1999/31/EC). Such material will be accepted and managed in accordance with the procedures laid down in Section 2.3.3 of the Annex to Council Directive 2003/33/EC.

The proposed quantities of each waste type to be accepted at the site are as follows;

Household & Commercial – 180,000 tpa
Industrial non-hazardous sludges – 10,000 tpa

Industrial non-hazardous solids – up to 150,000 tpa including stabilised by-products of other waste management processes.
Construction & Demolition – 90,000 tpa
Construction materials containing asbestos – 10,000 tpa
Inert materials imported for restoration purposes – no limit where used in landfill engineering.

Although the indicative tonnages presented above add up to more than 400,000 tonnes, no more than 400,000 tonnes will be accepted in a single year.

Raw Materials, Ancillary Materials, Fuels Etc

The primary materials used in the facility are

- landfill lining materials comprising:
  - Clay – won on site
  - HDPE liner – imported
  - Protective geotextile – imported
  - HDPE pipework – imported
  - Granular drainage material – imported
- daily cover material
  - Permeable soil – won on site
  - Fine soils – recovered from selected waste deliveries
  - Woodchip – odour abatement layer recovered from waste timber and placed over the daily cover
- capping material
  - Low-pemeability soils – won on site
  - LLDPE membrane – imported
  - Topsoil – won on site
- Gas collection pipework – imported

Electrical energy is used to power pumps, lighting and the administration building; Most of the plant is diesel powered; and petrol is used for small portable plant. The amount used in 2007 was as follows:

Table 3 – 2007 Energy Consumption

PARAMETER	UNITS	2007
Electricity	(kWh)	137,400
Diesel Oil	(Litres)	153,773
Petrol	(Litres)	120
Hydraulic engine oil	(litres)	131
Odour neutralizers*	Litres	1,875

*Clean Air 400 mixed with water is used as an odour neutralizer

Greenstar is currently moving towards utilisation of LFG for electricity generation. It is envisaged that electricity generation will commence in 2009. Greenstar has planning permission to install the necessary equipment but a grid connection is awaited. The plant will be capable of generating 4.2W of electricity.

Plant, methods and Processes

The facility operation is presented in Drawing WLA07 which illustrates the layout of the site with the landfill phases numbered.

The landfill comprises seven phases of four cells (i.e. 28 cells) all lined in accordance with the EU Council Directive on the Landfill of Waste.

All waste is delivered to the site in heavy goods vehicles (HGV) provided with the appropriate covers to prevent loss of load. Each vehicle first proceeds to the incoming weighbridge where it is weighed. The weighbridge operator and/or the facility manager may, at their own discretion, request the load to be tipped in the waste inspection area. The vehicles then proceed to the active waste disposal area, where waste is deposited under the direction of a banksman. The vehicles weigh out at the outgoing weighbridge and receive an individual weighbridge docket before exiting the site.

Each landfill cell is divided into a number of 'grids', which are used to identify the areas where waste is deposited. Each load is assigned the relevant grid number.

Cells are developed in 'phases'. Up until now, waste has been deposited sequentially in the order that the cells/phases are numbered, commencing at the southern end and moving north. The current extent of development is that 10 of 28 cells are constructed. The proposal is that a second face would be opened commencing at Phase 7 with development and filling following the reverse-order of cell numbering, i.e. 28,27,26, etc.

Waste is and will be deposited close to and above the advancing tipping face. The active face is confined to a height of 2.5 m after compaction, a width of 25 m and a slope no greater than 1 in 3. Deposited waste is spread in shallow layers on the inclined surface and compacted. The steel-wheeled compactors operate on the gradient of the more shallow face, pushing thin layers of waste and applying compaction pressure to them. For the proposal, a second compactor would operate at the 'northern' face.

The site operatives inspect the deposited waste for items that are not acceptable under the Waste Licence, such as tyres, gas bottles, batteries etc. These are removed and stored in appropriate areas for later removal from the site.

Each day's waste input is deposited to form a 'block', which is compacted and covered. The following day a new 'block' of waste is deposited adjacent to this block. This ordered method of waste deposition enables areas which have been filled to be progressively restored over the site life, minimising the areas of active waste deposition.

Landfill gas is captured using a combination of vertical and near-horizontal pipework and is currently flared at an enclosed landfill gas flare that commenced operation in December 2006. Planning permission was granted in April 2007 for installation and

operation of a gas utilisation plant. The proposed plant will be phased and will generate up to 4.2MW of electricity for input into the national grid. Greenstar is awaiting connection to the national grid and it is envisaged that the first gas engine will be installed and operational in 2009 pending the grid connection. The landfill gas will continue to be flared until such time as a connection is established by the ESB.

The effect of fugitive gas emissions is mitigated using odour neutralisers as well as the use of daily cover in accordance with the provisions of the waste licence. Daily cover comprises a minimum of 150 mm soil-like material covered with a 100 mm deep layer of woodchip, the latter being a well documented medium used to treat odourous compounds in bio-filters. Before being covered the waste is compacted. The immediate compaction of the waste within a small controlled area serves to minimise the available area for odours to escape from the daily tipping area. The progressive development of the landfill gas collection and treatment infrastructure enhances odour control as landfill gas combustion effectively destroys its odourous compounds. A high density of landfill gas extraction points have been installed at the landfill that are connected to modern state-of-the-art gas flares. A gas-engine and generator will be installed at the site in the near future to utilise the gas.

Leachate is contained by the lining system and systematically pumped to the fully-lined and covered leachate lagoon. Leachate is removed regularly by a licensed waste contractor to a wastewater treatment plant, thus minimising the potential for odours which can form as a result of leachate stagnating and becoming anaerobic.

When permitted by the EPA, leachate may be re-circulated into the waste body (under the cap) so as to accelerate stabilisation of the waste mass.

On completion of landfilling, both leachate and landfill gas management will continue until it is deemed by the EPA that the landfill no-longer poses a significant risk to the environment.

Outside of the landfill footprint, surface water is directed to a lagoon before being discharged to the adjacent stream via a constructed wetland. In the event that significant surface water contamination occurs, continuously active monitoring equipment will close the lagoon discharge to prevent a pollution event.

Ultimately, the entire waste mass will be covered and re-vegetated. The intensification of waste intake will not alter the final landform when compared with the current permitted development. Clearly, with this proposal, the final landform will be achieved sooner and this is seen as a positive impact. The development of the landfill to date has included the construction of berms and the planting of trees that are designed to limit the visual intrusion of the landfill within the local landscape.

The site's administration is housed in a dedicated office block and a weighbridge kiosk.

Other relevant infrastructure includes

- Fencing and security gates
- Paved and un-paved roads
- Diesel bund
- Maintenance shed
- Weather station
- Aviary

- Back-up generator
- Environmental monitoring and control infrastructure
- Screening bunds
- Screening planting

Compliance With Paragraphs (a) to (g) of Section 40 of the Act

This section of the Waste Management Act is concerned with the emissions from the site, environmental pollution, compliance with the Landfill Directive, conformity with waste management planning, use of best available techniques, the fitness of the applicant to hold a licence and financial provision.

Knockharley Landfill is designed, constructed, operated, monitored and will be restored in accordance with European Council Directive 1999/31/EC, the EPA Landfill Manuals, BAT guidance notes for waste facilities, the waste licence for the site, and with any other relevant environmental standards.

Being a fully lined landfill there is negligible risk that leachate or landfill gas will discharge to any environmental medium. This is borne out by the results of environmental monitoring undertaken in accordance with the conditions of the licence and reported to the Agency on an annual basis.

There has been no exceedance since the site opened. Intensification could increase the risk of noise exceedance however modelling has demonstrated that the licence limits will not be exceeded. Other emissions such as leachate and gas have similarly been modelled with no adverse impact predicted.

The existing landfill as operated by Greenstar in accordance with the conditions attached to the Waste Licence has not caused environmental pollution. This is confirmed by the regular monitoring undertaken in compliance with the licensed schedules of the licence. The EPA has audited the Knockharley landfill site on four separate occasions with no non-compliances noted making it the most compliant landfill in the country.

The EPA has published best available techniques (BAT) guidance for landfill. BAT guidance covers issues such as site location, facility design, facility management, waste acceptance, emissions, monitoring and closure/aftercare. Greenstar has employed BAT in all aspects of the facility. In many cases, the techniques used by Greenstar exceed the standard set down in BAT.

In making this proposal, the existing monitoring regime will continue. The only change is that because cells will develop more quickly, monitoring points will be brought on line sooner. As is demonstrated by leachate balance calculations, the overall quantity and hence the overall risk of leachate pollution, will reduce. As final capping will occur sooner, maximum-efficiency LFG capture (and utilisation/treatment) will commence sooner.

The site selection, its design and operation have and will be compliant with all provisions of the Landfill Directive.

Greenstar is the incumbent licensee for Knockharley and fifteen other facilities (as well as for a large number of waste permits). Greenstar has in all instances, demonstrated its fitness in compliance with the Act. The proposal does not include any activities or responsibilities that fall outside of Greenstar's normal remit.

Modelling has demonstrated that the intensified activity will not breach any noise standard.

The site has a well documented accident prevention plan coupled with an emergency response procedure.

After landfilling ceases, the site will be managed in accordance with its documented aftercare management plan.

Greenstar has discharged all of its financial responsibilities with respect to the site as is required by section 53 of the Waste Management Act.

Emissions from the Activity

The effect of emissions from the existing operation is monitored as per the existing licence. Monitoring is reported to the EPA in the site's annual environmental report (AER). Emission points are shown on Drawing WLA11.

Atmospheric Emissions: Dust – while there is a potential for increased dust due to traffic and construction, the same rigorous application of suppression by water-spray will prevent any increase in emission. As witnessed by the annual monitoring results the existing dust emission has not given rise to any breach of the licensed standard.

Landfill gas flare – the intensification of waste intake will not increase the overall quantity of landfill gas, it will however increase and advance the peak production. The flare/gas engines will continue to combust the harmful gas and trace compounds, as at present.

General odour emission – while there will be a second working face, the type of waste placed at the northern face will have little potential for odour generation. Greenstar will continue to employ best practice to minimise the risk that significant odours will be detectable in the vicinity of the site.

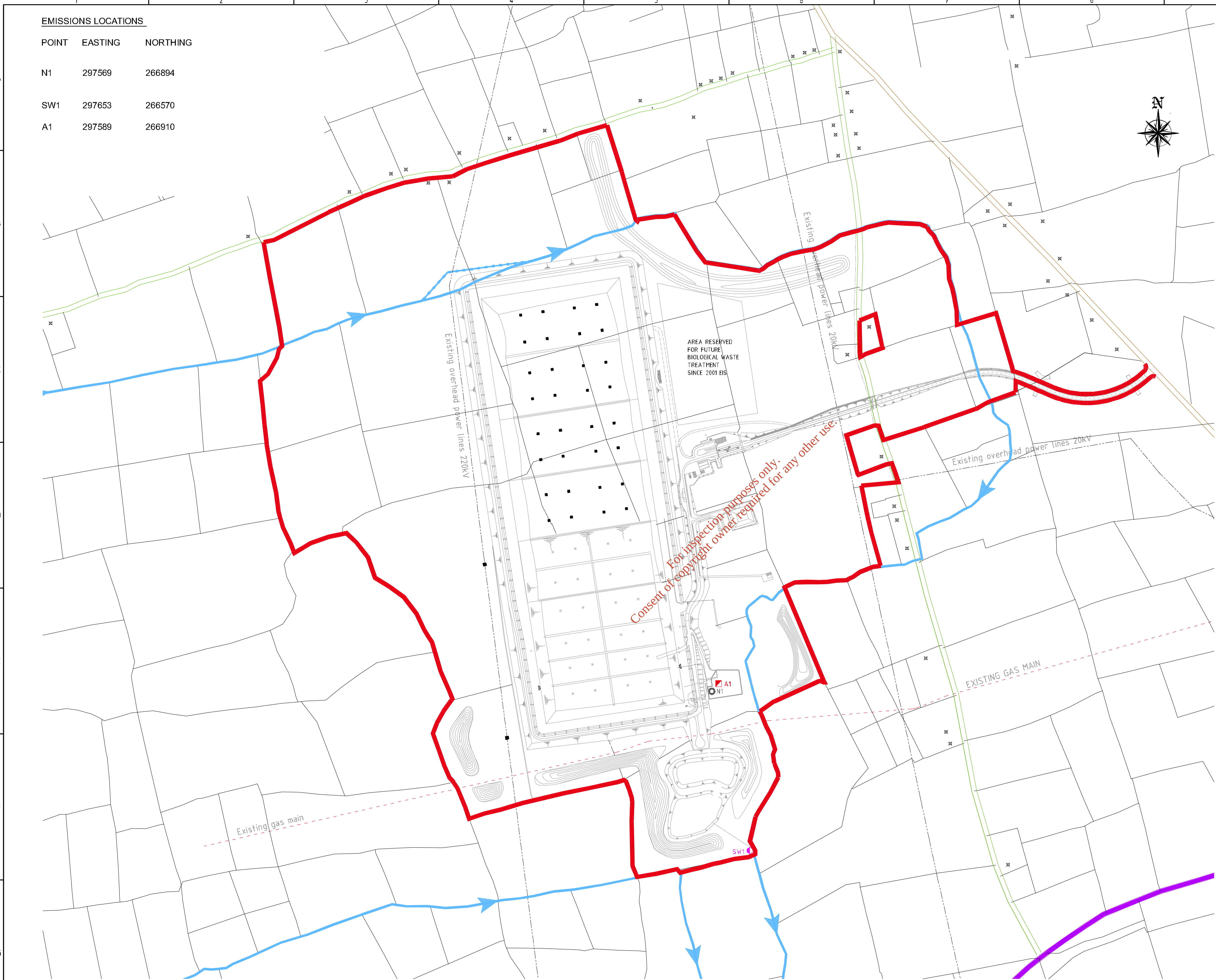
Emissions to Surface Waters: All surface water generated on site will, as at present be routed to the surface water attenuation pond. The intensification will not increase the size of the facility nor will it increase the catchment served by the surface water management system.

Emissions to Sewer: There are no emissions to sewer. Sewage is treated on site and the treated effluent is discharged to the leachate lagoon.

Emissions to Groundwater: There are no emissions to groundwater due to use of cell lining system which prevents escape of leachate to ground or groundwater. There are no percolation areas (the discharge from the site's WWTP is exported as leachate).

EMISSIONS LOCATIONS

POINT	EASTING	NORTHING
N1	297569	266894
SW1	297653	266570
A1	297589	266910



SITE PLAN

Scale 1:7500

Scale 1:7500

0m 75.00m 150.00m 225.00m 300.00m 375.00m

Legend:

- National Primary Routes
- National Regional Routes
- National County Routes
- Application Site Boundary
- Existing Water Courses
- Denotes Landfill Gas Emission Location (P Denotes Proposed Emission Location)
- Denotes Surfacewater Emission Location (P Denotes Proposed Emission Location)
- Denotes Noise Emission Location
- Existing Passive Gas Vent
- Proposed Passive Gas Vent
- Overhead Powerlines
- Underground Gas Mains

Rev.	Drawn	Chk'd	App'd	Rev Origin / Date	Description
A	JC	SMcA	DO'S	Cork / 22.12.08	ISSUE FOR REVISION OF WASTE LICENCE

Revision History A

Name of Client

greenstar

Name of Job

KNOCKHARLEY RESIDUAL LANDFILL SITE

Title of Drawing

EMISSIONS POINTS LOCATIONS

Scales Used: Scale 1:7500

This Drawing was printed to A3

Dwg. No.: CE07-172-02-FIG-WLA11 | Rev.: A

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Noise: Extra waste deliveries and extra waste-placement machinery will give rise to increased noise. However, modelling has demonstrated that noise levels form the site will remain in compliance with the licence

Leachate: Leachate will arise from the activity. As at present, it will be contained by the lining system, collected and stored before being transported off site for safe disposal. The quantity of leachate generated is dependent on the length of time that the landfill remains open. The proposal will reduce the overall quantity of leachate being produced. To date the nature of leachate has been consistent with what is to be expected form a non-hazardous landfill. As the nature of waste changes in the future, the nature of the leachate will also change resulting in a lower pollutant load.

Effects of Emissions

The intensification of waste intake will have a slight effect on the nature and extent of landfill gas generation. The overall quantity of gas generated will not increase but the peak generation will be advanced. However the abatement (flare, gas engines and daily cover) will continue to mitigate the effect.

Monitoring to date has demonstrated that the facility has had no adverse impact on surface water. There will be no change in the impact to the surrounding streams as a result of the intensification of waste intake. In fact the existence of the pond and wetland comprise the only engineered control in the local stream catchment.

There are no emissions or risk to ground/groundwater either currently or proposed as a result of the intensification of waste intake. The intensification does not require that the formation levels be lowered thus there will continue to be no risk to groundwater. There is no evidence or history of groundwater contamination at the site.

The intensification will lead to a slight increase in noise from waste deliveries and mobile plant and construction activities but this will not result in exceedance of limits specified in the waste licence.

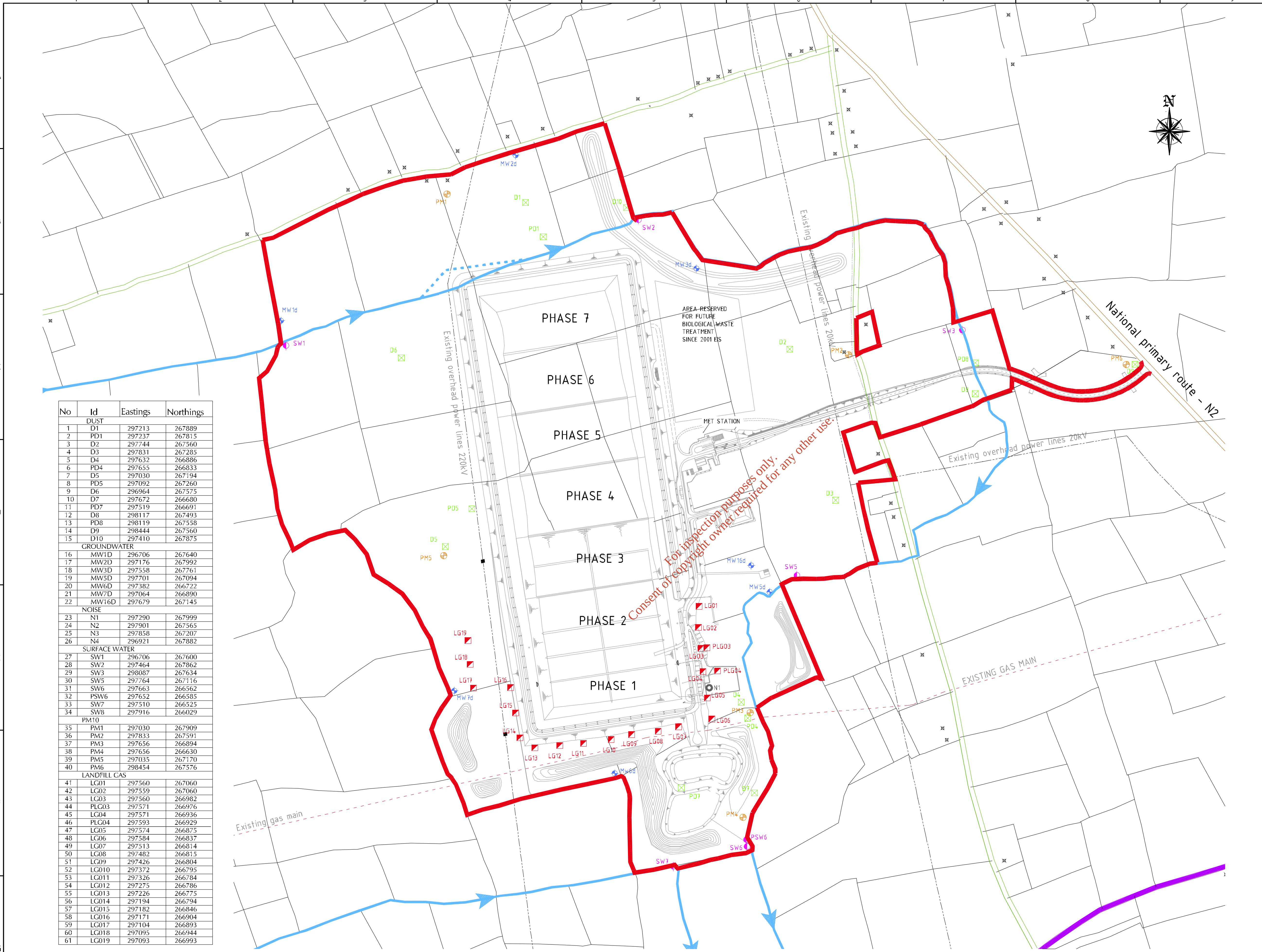
Monitoring and Sampling Points

The existing licence prescribes monitoring points for the site's emissions. These are shown on Drawing WLA12. As there is no proposal to increase the size of the facility, there is no perceived need to increase the number of sampling locations. The licence also prescribes a frequency for sampling and analysis that should not require any modifications. The proposal does not warrant any change in the frequency of monitoring.

Waste Arising

Leachate and landfill gas (fully described in Attachments D4 and D5) are the principal wastes arising on site. Office use and construction gives rise to a small quantity of

'domestic' waste. All such wastes are source segregated and sent off site for processing with the residual fraction being landfilled.



No	Id	Eastings	Northings
	DUST		
1	D1	297213	267889
2	PD1	297237	267815
3	D2	297744	267560
4	D3	297831	267285
5	D4	297632	266886
6	PD4	297655	266833
7	D5	297030	267194
8	PD5	297092	267260
9	D6	296964	267575
10	D7	297672	266680
11	PD7	297519	266691
12	D8	298117	267493
13	PD8	298119	267558
14	D9	298444	267560
15	D10	297410	267875
	GROUNDWATER		
16	MW1D	296706	267640
17	MW2D	297176	267992
18	MW3D	297558	267761
19	MW5D	297701	267094
20	MW6D	297382	266722
21	MW7D	297064	266890
22	MW16D	297679	267145
	NOISE		
23	N1	297290	267999
24	N2	297901	267565
25	N3	297858	267207
26	N4	296921	267882
	SURFACE WATER		
27	SW1	296706	267600
28	SW2	297464	267862
29	SW3	298087	267634
30	SW5	297764	267116
31	SW6	297663	266562
32	PSW6	297652	266585
33	SW7	297510	266525
34	SW8	297916	266029
	PM10		
35	PM1	297030	267909
36	PM2	297833	267591
37	PM3	297656	266894
38	PM4	297656	266630
39	PM5	297035	267170
40	PM6	298454	267576
	LANDFILL GAS		
41	LG01	297560	267060
42	LG02	297559	267060
43	LG03	297560	266982
44	PLG03	297571	266976
45	LG04	297571	266936
46	PLG04	297593	266929
47	LG05	297574	266875
48	LG06	297584	266837
49	LG07	297513	266814
50	LG08	297482	266815
51	LG09	297426	266804
52	LG010	297372	266795
53	LG011	297326	266784
54	LG012	297275	266786
55	LG013	297226	266775
56	LG014	297194	266794
57	LG015	297182	266846
58	LG016	297171	266904
59	LG017	297104	266893
60	LG018	297095	266944
61	LG019	297093	266993

0m 75.00m 150.00m 225.00m 300.00m 375.00m

Scale 1:7500

SITE PLAN

Scale 1:7500

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2440,2441,2442,2508,2509,2510,2577A,2577B,2578A,2578B,2579A

Legend:

- Denotes Landfill Gas Emission Location (P Denotes Proposed Emission Location)
- Denotes Groundwater Monitoring Location
- Denotes Surfacewater Emmission Location (P Denotes Proposed Emission Location)
- Denotes Noise Monitoring Location
- Denotes Dust Monitoring Location (P Denotes Proposed Monitoring Location Operational from July 2006)
- Denotes PM10 Monitoring Location
- National Primary Routes
- National Regional Routes
- National County Routes
- Application Site Boundary
- Existing Water Courses
- Overhead Powerlines
- Underground Gas Mains

Rev.	Drawn	Chk'd	App'd	Rev Origin / Date	Description
A	JC	SMcA	DO'S	Cork 22.12.08	ISSUE FOR REVISION OF WASTE LICENCE

Revision History A

Name of Client

greenstar

Name of Job

KNOCKHARLEY RESIDUAL LANDFILL SITE

Title of Drawing

MONITORING POINTS LOCATIONS

Scales Used: Scale 1:7500

This Drawing was printed to A3

Dwg. No.: CE07-172-02-FIG-WLA12 | Rev.: A

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The proposed intensification of waste intake will not increase leachate arisings. It will not increase the overall volume of gas however the peak generation will occur sooner. There will be a slight increase in 'domestic' waste associated with extra employees.

Off-site Treatment of Wastes

Only leachate is treated off-site. It is transported by road tanker to a waste water treatment plant (currently Navan Sewage Treatment Plant). The proposal does not warrant any change from the current arrangement.

Measures to Prevent Unauthorised Emissions

Procedures for accident prevention and Emergency Preparedness and Response have been developed for Knockharley Landfill. These policies reflect the requirements of the licence and of the EPA guidance documents with respect to measures to prevent unauthorised emissions. The policies are reviewed annually and when deemed necessary.

Closure Restoration and Aftercare

A restoration and aftercare plan for the facility has been approved by the Agency. The site will be closed by establishing an engineered cap. The intensification does not bring any change other than advancing the date when the waste will be capped and vegetated. Aftercare including leachate and gas management will continue until monitoring results indicate that it is no longer warranted.

Financial Provision

Greenstar is in a position to meet any financial commitments or liabilities that the Agency reasonably considers will be entered into or incurred by it in carrying out the activity to which the application relates or in consequence of ceasing to carry out that activity.

Condition 12 of the current licence requires Greenstar to arrange for the completion, by an independent and appropriately qualified consultant, of an Environmental Liabilities Risk Assessment (ELRA). The ELRA for Knockharley Landfill was submitted to the Agency in accordance with the licence conditions and includes a proposal for financial provision arising from the carrying of activities to which the licence relates. Currently Greenstar has financial and insurance provision in place to the satisfaction of the Agency.

Major Accident Hazardous and Discharges to Aquifers

These aspects of the Regulations do not apply to the facility because it is a non-hazardous landfill.

Discharges to Aquifers

The lining system at the landfill meets and exceeds the requirements of the landfill directive with respect to groundwater protection. The protection includes both the lining system and the existence of a thick layer of low-permeability soil between it and the aquifer. This protection combined with the fact that this is a non-hazardous landfill demonstrates compliance with Council Directive 80/68/EEC of 17 December 1979 on the protection of groundwater against pollution caused by certain dangerous substances.