

Ms Sonja Smith
Office of Climate Licensing and Resource,
EPA Regional Inspectorate,
Inniscarra,
County Cork.

12th June 2014

Re: Application for Waste Licence (W082-02) Greenstar, Dock Road, Limerick

Dear Ms Smith,

I refer to the Agency's letter dated the 26th May 2014 in accordance with Regulation 10(2)(b)(ii) of the EPA (Industrial Emissions)(Licensing) Regulations 2013. The requested information is set out herein.

1. Under Regulation 9(2)(e) state whether the EIS submitted to the Agency is identical to the EIS submitted to the Planning Authority.

The EIS submitted with the Licence Application is identical to that submitted with the planning application.

2. Under Regulation 9(2)(g) provide a drawing showing outdoor waste storage areas with an indication of the waste types stored in each area. Describe measures for management of baled and stockpiled waste including measures for the prevention of emissions. State the maximum stockpile dimensions including height.

The location of the storage areas are shown on Drawing No 003 in Attachment 1. The dimensions of the storage area, including height are:

Metals (Stores in bins and skips)
Wood (14 x 8m and 3m high);
C&D materials (6 x 11m and 2.5m high)
Baled cardboard (14 x 14m and 2.7m high)
Plastic (18 x 5m and 2.7m high)
Glass stored in three RO RO units each 2.5 x 7m and 2.3m high
Baled MSW (45 x 45m and 4.5m high)

No processing is carried out externally and therefore there is no need for specialist measures to prevent emissions from the storage of the wood and C&D materials. In general, Greenstar keeps the stockpiles to a minimum.

Cont'd

Of the dry recyclables, only limited amounts of clean cardboard, plastic film, newsprint, shredded paper and baby milk tin cans are baled and stored externally for short periods pending collection which eliminates the risk of contaminated rainwater run-off. The baling also eliminates the risk of windblown litter.

The bales of MSW are wrapped in multiple layers of polythene sheeting, which contains any liquids and odours and prevents the generation of windblown litter. The compacted and wrapped waste bales are tidy and easily manageable during transportation, storage and handling. The bales are only stored until there is enough for a shipment. Typically, the maximum storage time for an individual bale is 21 days. The method of storage of the baled MSW has been approved by the OEE, subject to a variety of conditions relating to maximum quantity and stack height (Attachment 2).

3. *Under Regulation 9(2)(g) describe in greater detail the type of treatment used for missed packaging, mixed recyclables and mixed C&D waste streams accepted at the installation and the purpose of the treatment steps undertaken.*

Clean cardboard, plastic film, newsprint, shredded paper and baby milk tin cans are baled for dispatch from the site. The cardboard and paper bales are typically transported onwards for export to paper mills. Other baled recyclables go for onward recycling at domestic plants.

The mixed recyclables typically collected from households or businesses, mixed packaging and C&D wastes are not treated at the facility. They are bulked up and transferred to other authorised treatment facilities.

4. *Under Regulation 9(2)(g), in respect of future plans to produce Solid Recovered Fuel (SRF) provide details on amounts of this material, storage arrangements and associated fire protection measures.*

It is not intended to manufacture SRF in the short to medium term. Greenstar is seeking approval to produce SRF to allow the flexibility to avail of future market opportunities, including the designation of end of waste status to SRF, if and when EU Regulations on this are introduced.

The SRF will be manufactured inside the waste processing buildings. The finished product will be baled in a similar way to the MSW. At this time it is not possible to quantify the amount that will be produced as this is, to a certain extent, dictated by the number and available capacity of outlets in Ireland and overseas to accept the SRF. If overseas outlets are used, the maximum amount that will be stored on site at any one time will be 3,000 bales. The bales will be stored externally in the area currently used for the MSW bales.

In relation to fire prevention, detection and response, Greenstar has carried out a detailed risk assessment of its operations and in April 2014 adopted Fire Prevention Procedure, which applies to all its facilities including Dock Road. The purpose of the procedure is to identify fire prevention measures in order to:

- Minimise the risk of fire;

- Ensure earliest possible detection of the outbreak of fire;
- Ensure earliest possible response in the event of fire;
- Ensure, in so far as is reasonably practicable, that first aid and fire-fighting equipment is in place, and
- Ensure that the Emergency evacuation controls are in place and implemented to safeguard the safety of site personnel, visitors and neighbours.

A copy of the Procedure is in Attachment 3.

As a short term measure there is a 2 hour post-closure fire watch at the facility, but Greenstar recognises the need for a more sophisticated fire detection system. Greenstar reviewed the fire detection systems that are currently available and identified that an air sampling type smoke detection system is the most appropriate one for the type of waste processing it carries out.

The system works by continually drawing air into a series of 30mm diameter pipework mounted at high level through the building using an aspirator. The air is filtered to remove dirt and dust before it enters a laser detection chamber that detects smoke. The benefit of this system over other smoke detection systems is the sensor can differentiate between smoke and dust and thereby prevent false alarms. The network of pipes has the added benefit of minimising the false alarms associated with beam-type detection.

The filters in the detection unit will need to be changed quarterly and the high level pipework cleaned by blow out with compressed air using a connection a ground level. The frequency of the cleaning depends on the dust levels within the buildings.

Greenstar is committed to providing system, which will take approximately 2-3 weeks per site to install and commission. Installation at the Limerick facility is expected to be complete by the end of July 2014.

5. *Under Regulations 9(2)(b) and (s), in the context of the current practice of baling mixed municipal waste without significant treatment for shipment to waste to energy facilities, state how the waste hierarchy referred to in section 21A of the waste Management Act 1996, as amended, will be implemented to the maximum extent possible at the installation.*

Also, state how you ensure that accepted waste undergoes recovery operations in accordance with section 29 (2A) of the aforementioned Act.

The EU Waste Framework Directive 2008/98/EC was introduced to coordinate waste management in the Member States to limit the generation of waste and optimise the organisation of waste treatment and disposal.

The most recent national waste policy statement 'A Resource Opportunity Waste Management Policy In Ireland 2012' is based on the EU waste hierarchy and encompasses a range of measures across all tiers namely, prevention, preparation for reuse, recycling, other recovery and disposal. The Statement sets out how the higher tiers can reduce Ireland's reliance on finite resources, virtually eliminate reliance on landfill and minimise the impact of waste management on the environment. It is a policy objective that when waste is generated the maximum value must be extracted from it by ensuring that it is reused, recycled or recovered.

Greenstar and the other waste contractors that deliver wastes to the facility offer a three bin collection service-mixed dry recyclables (green bin), organic waste (brown bin) and residuals (black bin) which is designed to facilitate the recycling and other recovery of household and commercial wastes.

Only the residual 'black bin' waste, which typically contains no recyclables other than metal containers inadvertently placed in the bin by waste producer, is baled and sent for co-incineration. There is a basic visual pick of some material from the waste that may be unsuitable for baling. This is consistent with the OEE approval to produce the RDF granted in May 2012, a copy of which is in Attachment 4.

All to the facilities to which the bales are delivered are classified as R1 Recovery Activities as listed in the Fourth Schedule of the Waste Management Act 1996, as amended. Prior to the receipt of the Agency's approval in May 2012 to bale and export the residual waste, the only outlet for this material was landfill. Landfill, as a disposal activity, is at the bottom of the waste hierarchy.

6. Under Regulation 9(2)(i), describe how foul effluent which might arise from waste stored outdoors and indoors is managed. Submit a drawing showing drainage systems for the foul effluent generated outdoors and indoors.

The existing drainage layout is shown on Figure 001 in Attachment 5. Gullies inside the processing buildings have been capped off and any liquid arising inside the building is now diverted to a holding tank located inside the building, in the truck pit in the north-west corner and is tankered to an authorised Irish Water off-site wastewater treatment plant.

Rain water run-off from the majority of the paved yards, including areas where wastes are stored, is collected and discharged to a man-made drain at the north eastern site boundary via a three chamber oil interceptor (40m³ capacity). There is some diversion to foul from the area used to store the baled mixed municipal waste.

As described in Attachment I. 2 of the Application, the monitoring of the run-off from the paved area has identified elevated Biochemical Oxygen Demand (BOD) and suspended solids. To address this issue, it is proposed to divide the site into 'clean' and 'dirty' areas in terms of surface water run-off management.

The 'clean' area will comprise the building roofs and the yard in the south east of the site (8,195m²), while the 'dirty' area will comprise the yard between the processing buildings and the northern and north eastern boundaries (8,499m²).

The areas are shown on Figure 1 in the IE Consulting Report in Attachment D1 of the Application. A copy of the report is in Attachment 6. The 'dirty area' will include the MSW baled storage area, the metals, wood, C&D storage bays and the baled plastic and paper and cardboard storage areas.

The division of the site into 'clean' and 'dirty' areas will involve re-routing the existing drainage system. The run-off from the southern yard and building roofs will continue to be directed to the interceptors and will outfall to the drain at the existing discharge point. The

run-off from the 'dirty' area will pass through a new grit trap and oil interceptor before connecting to the new foul sewer.

7. *Under Regulation 9(2)(i), state when the sewer is going to be built and effluent discharges commenced. State whether the foul effluent and storm water run-off from the waste stored outdoors will be directed to the sewer.*

We expect that construction of the new sewer will commence in Q3 2014. The application to connect to the foul sewer is being managed directly by Greenstar's landlord, but Greenstar has been informed in writing on 11/06/2014 by Limerick City and County Council that the Council agreed in principle with the landlord to provide a wayleave to construct the sewer and that it is anticipated that the relevant legal agreements will be concluded in the near future by both parties.

As described in the response to item 6 above, surface water run-off from the external storage areas will be directed to the sewer. Other surface water will continue to be discharged at the current discharge point.

8. *Under Regulations 9(2)(i) and (k), in respect of the groundwater monitoring results submitted in the baseline report, explain the meaning of EPH/DRO and the significance of this parameters exceedance, compared to the Interim Guideline value (IGV). Also, provide borehole logs for GWM1 and GWM2 and GWM3 and a revised drawing showing their locations.*

The terms EPH/DRO used in the Baseline Report are acronyms for Extractable Petroleum Hydrocarbons and Diesel Range Organics respectively.

The existing groundwater monitoring wells (GWM1, GWM2 and GWM3) were installed in 2002 to monitor groundwater quality in response to the identification of oil contamination in the subsoils. While hydrocarbon levels are detected in the wells intermittently, and occasionally exceed the IGV, OCM considers that they are not of environmental significance. Hydrocarbons were not detected at any of the wells during the latest round of monitoring (April 2014).

As referred to in the Baseline Report, the report on the well installation, which would have included the borehole logs of GWM1, GWM2 and GWM3, is not available and Greenstar does not have copies of the logs. The well locations are shown on Drawing No 1 in Attachment F of the Application, a copy of which is in Attachment 7.

9. *As required under Regulation 9(2)(q), describe the measures to be taken under abnormal operating conditions, including start-up, shutdown, leaks, malfunctions, breakdowns and momentary stoppages.*

The site is operated under an Integrated Management System comprising of ISO 14001 and OHSAS 18001. Any spills or leaks are addressed in accordance with the spill procedure outlined in the site Emergency Response Plan and all relevant staff trained accordingly. Any blockages or breakdowns are addressed by qualified maintenance staff. No environmental impacts are envisaged due to equipment malfunction. In the case of a major breakdown, where

the issue cannot be rectified in a timely manner or an alternative piece of equipment sourced, then a particular waste type may be temporarily diverted to another licensed site if necessary.

10. *Under Regulation 9(2)(r), update the ELRA and CRAMP provided in the application to reflect the proposed increase in waste intake and current EPA guidance and submit the amended documents accordingly.*

The current ELRA and CRAMP, including the financial provision, were approved by the Agency in February 2011 as part of the transfer of the licence to Starrus Eco Holdings Limited. All costs associated with the closure plan for the facility were fully detailed and subsequently approved by the Office of Environmental Enforcement (OEE) as were costs associated with any environmental event (ELRA). Notification of the transfer was confirmed as recently as March 2014. In this context, and given that the application is only for slight intensification, Greenstar does not consider it necessary to revise the ELRA and CRAMP at this time, but will ensure that this is done within 6 months of the grant of the IE Licence.

11. *Under Regulation 9(2)(v), state the extent to which arrangements are necessary for the installation to comply with Directive 80/60EEC.*

In accordance with Regulation 9(2)(v) the following arrangements are in place to comply with the requirement of Directive EEC/80/68 to protect groundwater from pollution by certain dangerous substances.

Operations involve the storage and handling of fuel, engine hydraulic and lubricating oils and anti-freeze. Road vehicles are not refuelled at the facility. There is a 3,200 litre self bunded diesel oil plastic storage tank adjacent to the electrical sub-station at south west boundary, which is used for fuelling the onsite plant items (forklifts, grabs etc.).

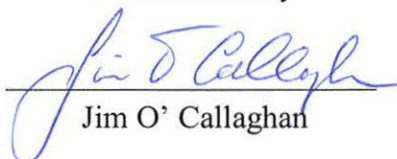
The concrete bund around the storage tank was constructed recently and is fit for purpose. The original bund around the storage tank had been tested every three years to confirm it is fit for purpose. The most recent tests, which were completed in November 2011, confirmed the tanks and pipework are fit for purpose and working satisfactorily. A copy of the integrity test report is in Attachment H.1 of the Application.

Lubricating and engine oil and waste oils generated in plant servicing are stored in a contained areas inside the workshop which has a concrete floor. A self bunded quarantine storage unit for hazardous materials recovered from the incoming waste is located adjacent to the diesel storage tank.

A CCTV survey of the drainage system was completed in 2013.

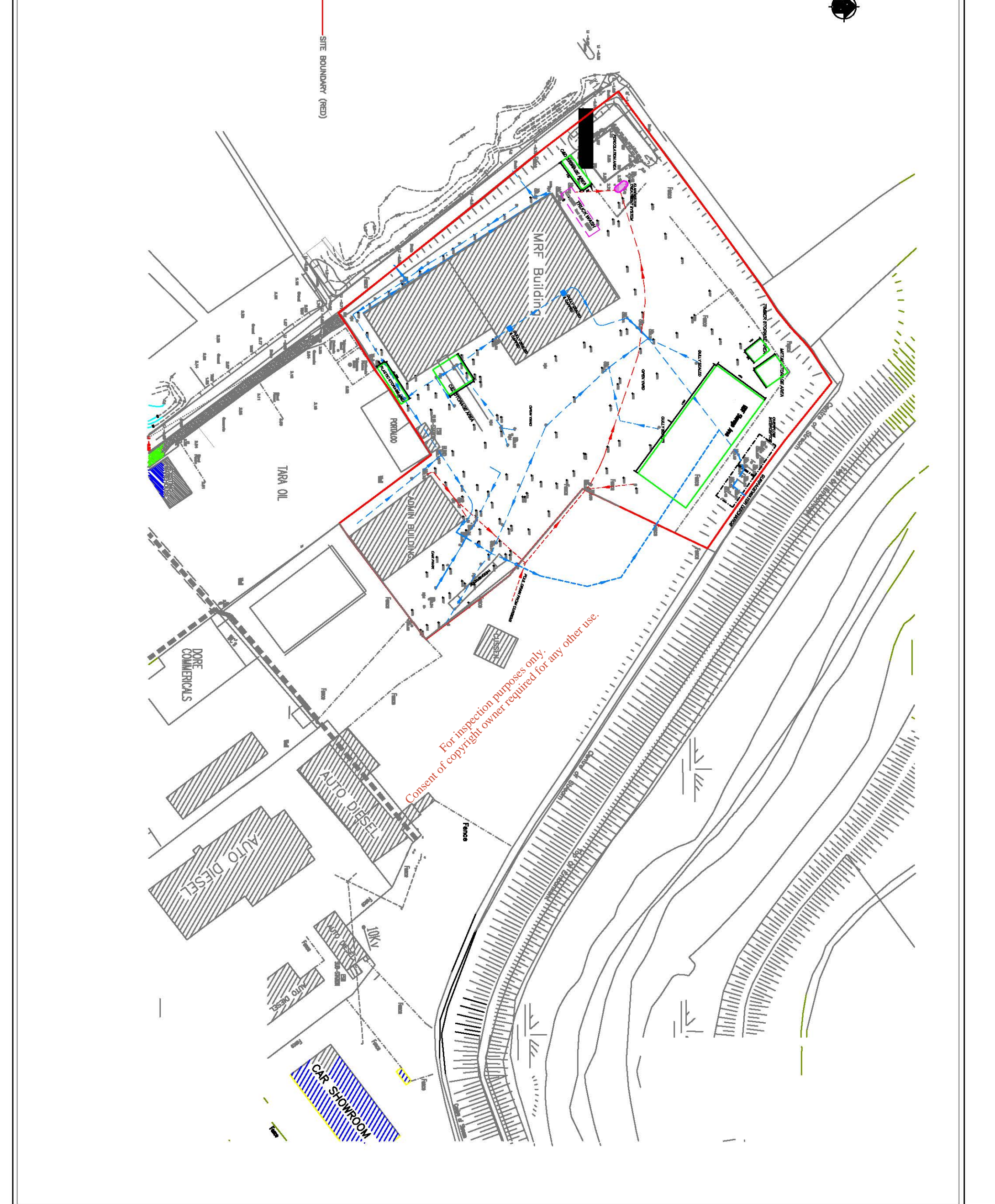
Should you have any queries, Please do not hesitate to contact me.

Yours Sincerely


Jim O' Callaghan

Attachment 1

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NOTES

<p>Greenstar</p>													
<p>External Storage Area</p>													
<p>SCALE DRAWING No. 003</p>	<p>REV. A</p>												
<p>1: AS</p>													
<p>DOS Filename : *****</p>													
<p>CLIENT</p> <p>O'Callaghan Moran & Associates Survey, Planning, Natural Street, Cork, Ireland. Tel: (021) 4321931 Fax: (021) 4321122 email : om@om.ie</p>													
<p>REVISIONS</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>REV</th> <th>DATE</th> <th>DESCRIPTION</th> <th>OWN</th> <th>CHKD</th> <th>APP</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>09/06/10</td> <td>PRELIMINARY ISSUE</td> <td>JDC</td> <td>SM</td> <td>ee</td> </tr> </tbody> </table>		REV	DATE	DESCRIPTION	OWN	CHKD	APP	A	09/06/10	PRELIMINARY ISSUE	JDC	SM	ee
REV	DATE	DESCRIPTION	OWN	CHKD	APP								
A	09/06/10	PRELIMINARY ISSUE	JDC	SM	ee								
<p><small>This drawing is the property of O'Callaghan Moran & Associates and shall not be used for any other purpose without the prior written permission of O'Callaghan Moran & Associates and shall be returned upon request.</small></p>													

Attachment 2

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Mr Malcolm Dowling
Grp Env Compliance Mgr
Greenstar Environmental Services Limited
Unit 6 Ballyogan Business Park,
Ballyogan Road
Sandyford
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14/03/12

Our Ref: W0082-02/AP01JH

Dear Mr. Dowling,


I refer to your letter dated 08/03/12, received by the Agency on 12/03/12, requesting approval for the external storage of Refuse Derived Fuel (RDF) at your facility at Dock Road, Limerick (Reg No. W0082-02).

I am to advise you that your request is to the satisfaction of the Agency contingent upon the following:-

- 1) only RDF arising from the processing of materials on-site shall be stored at the facility,
- 2) the volume of RDF stored at the facility at any particular time shall not exceed 3,000 tonnes,
- 3) all RDF stored at the facility shall be wrapped, baled and totally enclosed in a layer of plastic film,
- 4) all RDF stored at the facility shall be stacked on wooden pallets and stored only on the area of hardstand ground designated in your proposal (delineated on the accompanying drawing),
- 5) all RDF material stored at the facility shall be removed off-site as soon as possible and shall not exceed the one month timeframe referred to in your proposal and
- 6) full compliance with the conditions of Waste Licence W0082-02 and

The above agreement may be amended or revoked at any time by the Agency. If you have any queries please contact the undersigned at 021 487 5540. Please quote the above reference in any future correspondence in relation to this matter.

Yours sincerely,



Joe Hunter
Inspector
Office of Environmental Enforcement



Attachment 3

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Doc. No.: IP-16	Revision No.: 01	Issue Date: 28 th April 2014
Approved By:	Malcolm Dowling – Group Environmental Manager Oliver Callan – Group H&S Manager	Page 1 of 3

IP-16 FIRE PREVENTION PROCEDURE

1. PURPOSE

The purpose of this procedure is to identify fire prevention measures in order to:

- Minimise the risk of Fire
- Ensure earliest possible detection of the outbreak of fire
- Ensure earliest possible response in the event of fire
- Ensure in so far as is reasonably practicable that first aid and fire-fighting equipment is in place
- Ensure that the Emergency evacuation controls are in place and implemented to safeguard the safety of site personnel, visitors and neighbours.

2. SCOPE

This procedure applies to all Greenstar site activities as listed in the scope of certification.

3. RESPONSIBILITY

- **Senior Management** are responsible for overseeing the implementation of this procedure and for ensuring that the necessary measures are in place to prevent fire across all sites in line with this policy and site specific Emergency Response Plans.
- The **Operations / Facility Manager** is responsible for ensuring that:
 - This procedure is implemented and maintained,
 - All documents are available where required and reflect current site practice and requirements,
 - Site employees understand:
 - their responsibilities in relation to fire prevention and
 - are aware of actions to be taken in the event of a fire.
 - Appropriate emergency equipment is readily available, serviced and usable,
- The site **Fire Marshal and Fire Wardens** are responsible for their duties as defined in the site specific Emergency Response Plan and for the completion of the Weekly Fire Warden Inspections – SF-043.
- All **Site Personnel** must adhere to the requirements defined in the Emergency Response Plan and the requirements of this procedure.
- The **EHS Engineers** are responsible for observing that appropriate site specific fire prevention measures are in place and are being implemented during routine EHS inspections.
- The **Management Team** are responsible for reporting instances where appropriate fire prevention measures have not been in place and documentation of the instance in accordance with the Non-Conformance, Corrective and Preventive Action Procedure – IP-10.

4. REFERENCES

Documents

- Greenstar Waste Facilities Safety Statement
- Staff Training Records - TMS
- IP-10 Non Conformances Corrective Preventive Actions Procedure
- IP-15 Emergency Response Procedure

Forms

- IF-15B Site Emergency Response Plan (ERP)
- Site Fire Register
- SF-053 Fire Drill Report
- SF-043 Weekly Fire Warden Inspections
- IF-15A Emergency Contact list
- SF-034 Site Rules

Doc. No.: IP-16	Revision No.: 01	Issue Date: 28 th April 2014
Approved By:	Malcolm Dowling – Group Environmental Manager	Page 2 of 3
	Oliver Callan – Group H&S Manager	

5. PROCEDURE

5.1 **The following sources of ignition may cause fire on the Greenstar sites;**

- **Spontaneous combustion of waste**
- **Ignition sources within the waste**
 - Hot ash,
 - Chemicals or
 - Corrosives that might ignite on contact.
- **Hot works**
 - Cutting
 - Grinding or
 - Welding.
- **Electrical or mechanical components overheating**
 - Mobile plant
 - Electrical panels- hot spots
 - Portable electrical heaters or blowers.
- **Smoking**
 - Employees or third parties not obeying site smoking policy requiring smoking only in designated area.
- **Arson**
 - Intruders/trespassers causing a fire

5.2 **The following control measures should be initiated to control the sources of ignition**

Waste

- Stockpile kept to a minimum, goal is daily clean floor policy
- two hour fire watch post-closing
- loads coming in after closing hours - skips to be left in the yard and tipped next morning
- Regular housekeeping and deep clean regime in place to reduce dust concentration and minimise fire spread

Electrical/Mechanical

- Hot works permit and four hour fire watch
- Suppression systems on shredders
- Ensure all mobile plant engine compartments are kept clear of paper, rubbish or other debris
- Ensure mobile plant parked away from stores materials
- Suppression systems on all generators that work continuously
- Generator maintenance to be carried out per manufactures instructions
- Electrical testing of panels to identify "hot spots"
- Discontinue the use of any portable heaters
- Insure electrical panels free of dust and debris and kept closed at all times
- Electrical switch rooms to be kept clear at all times
- Maintenance shops to be kept tidy and gas bottles chained up

Material storage

- Keep processed material storage to a minimum
- Timely turn around on containers
- Any material stored outside must be stored a t least five meters from any building
- Diesel storage tanks above 2000Li. capacity to be of metal construction



Doc. No.: IP-16	Revision No.: 01	Issue Date: 28 th April 2014
Approved By:	Malcolm Dowling – <i>Group Environmental Manager</i>	Page 3 of 3
	Oliver Callan – <i>Group H&S Manager</i>	

Detection Systems

In the event of a fire, early detection may prevent fire spread and possibly avoid a major incident

- Physical presence on site 24/7, Employees or security
- Out of hours security with scheduled patrols and CCTV monitoring.
- Out of hours remote CCTV monitoring.
- Early warning smoke or flame detection systems - **TBA**

Emergency Response

Site specific Emergency Response Plan as per IP-16 Emergency Response Procedure in place for each site to include;

- Weekly checking of all firefighting equipment to include fire extinguishers, fire hydrants and fire hoses
- Ensure any extinguishers that are spent are refilled or replaced
- Fixed water monitor where possible hot spots might exist
- Annual checking and maintenance of all firefighting equipment as required by legislation to include pressure testing of hydrants
- Six monthly fire drills with response times recorded
- Trained fire wardens in place on all sites
- Trained first aid firefighting teams on site where practical
- Emergency pack, to contain site drawings indicating fire hydrants, hazardous material (diesel oil etc.) in place in weighbridge for emergency services
- Liaise with local fire officer in relation to possible hazards on site that could be a risk to fire crews.

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Attachment 4

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Mr Malcolm Dowling
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22nd May 2012

Our Ref: W0082-02/AP02JH

Dear Mr Dowling,

Request for approval for the baling, wrapping and storage of Refuse Derived Fuel (RDF) at Greenstar, Dock Road, Limerick.

I refer to your request for approval in relation to the above, received by the Agency on 03/05/2012.

Based on the information provided in your proposal, please note that the baling, wrapping and temporary storage of RDF is approved under Condition 3.2.1 contingent on the following:

1. Only residual Municipal Solid Waste which is not suitable for recycling shall be used to produce RDF.
2. Records of the profiling and characterisation of RDF shall be maintained on site and be made available for inspection by the Agency at any time. This shall include the percentage of different waste streams that make up the bales of RDF. Such characterisation shall be carried out monthly.
3. The maximum quantity to be stored on site at any one time shall not exceed 3,000 bales and bales shall be stacked no more than 4 bales high.
4. Bales of RDF shall be dated at the time of production and may be stored on site for a period not exceeding 4 weeks.
5. The storage area for the RDF bales shall be on impermeable hardstand ground.
6. Bales shall be stored in such a way as to minimise and prevent the occurrence of fire, contamination of surface water and the generation of odour and leachate.
7. Full compliance with the Conditions of Waste Licence Reg No: W0082-02.
8. That the Agency may revoke this agreement at any time.

Please quote the above reference in future correspondence in relation to this matter.

Yours sincerely



Joe Hunter
Inspector
Office of Environmental Enforcement

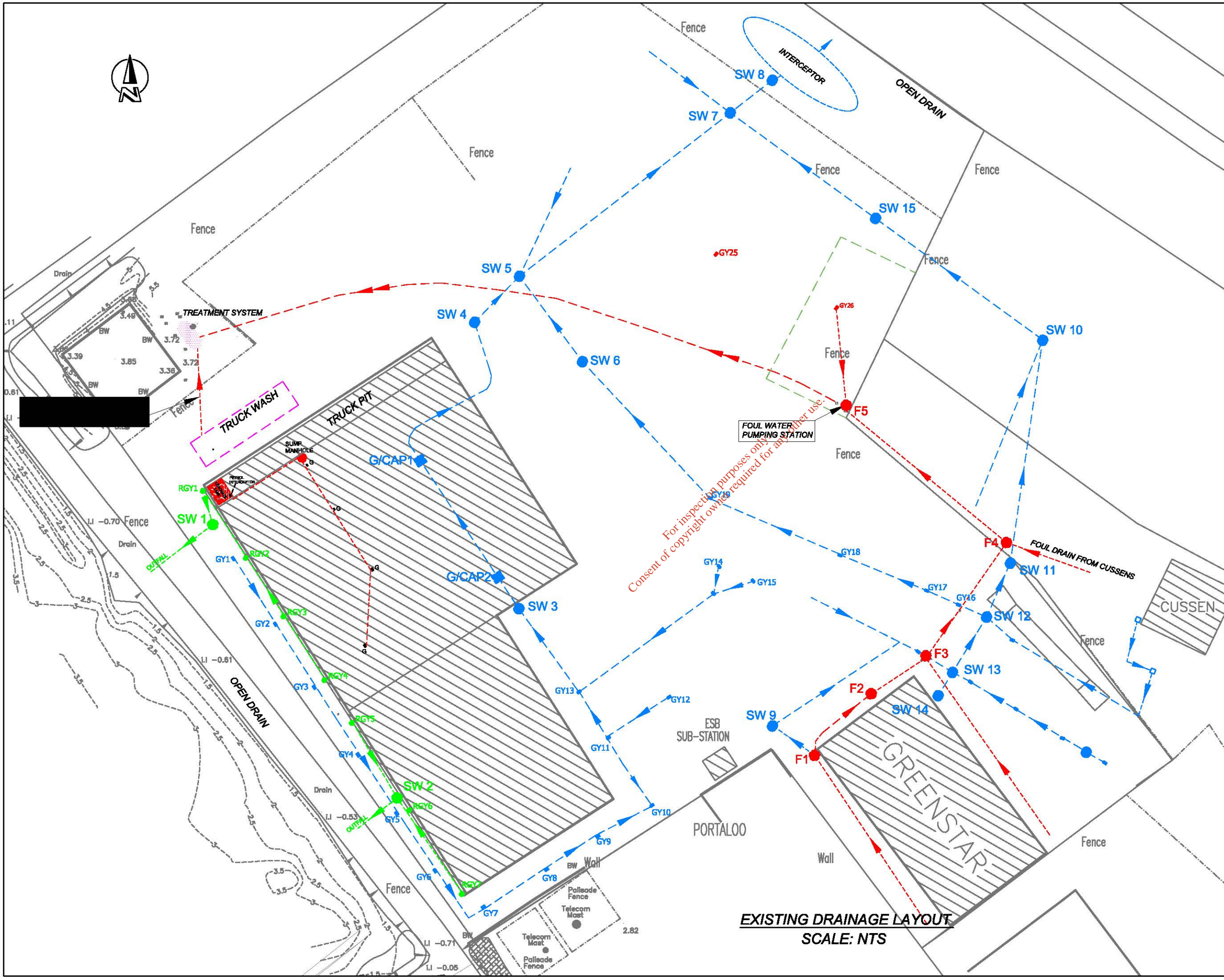


Attachment 5

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- NOTES:-
- 1. DO NOT SCALE FROM THIS DRAWING
 - DENOTES EXISTING STORM DRAIN
 - DENOTES EXISTING RAIN WATER DRAIN
 - DENOTES EXISTING FOUL DRAIN



A	29.11.13	DRAFT	MCC	KB
rev.	date	amendment	dm	abd



GREENSTAR FACILITY
DOCK ROAD
LIMERICK

EXISTING SITE DRAINAGE LAYOUT
AS OF 03/06/2014

EXISTING DRAINAGE LAYOUT
SCALE: NTS

DRAWING STATUS: INFORMATION		SCALE: NTS	A3
DRAWING NUMBER: FIG_001		DRAWN: MCC	DATUM: ORDNANCE
REV: B	CHECKED: -	DATE: 03.06.14	

Attachment 6

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Our Ref: IE580/11011

Your Ref:

Date: 17th December 2013

Malcolm Dowling
Group Environmental Compliance Manager
Greenstar Ltd
Unit 6 Ballyogan Business Park
Ballyogan Road
Sandyford
Dublin 18

INNOVATION CENTRE
GREEN ROAD
CARLOW

TEL: 059 91 33084
FAX: 059 91 40499
EMAIL: info@iece.ie
WEB: www.iece.ie

Dear Malcolm

Re: Planning Reference 13/300 – Limerick County Council

We confirm having undertaken a review of the existing drainage arrangements at the Greenstar, Dock Road, Limerick facility with a view to discharging surface water run-off from hard standing yard areas to the foul sewerage system.

It is our understanding that it is the intention of the landowner of your facility to secure a wayleave and construct a suitable foul water drainage system to connect the Dock Road facility to the municipal wastewater treatment plant at Bunlicky.

Surface water run-off from hardstanding areas within these type of waste handing and transfer facilities has the potential to contain elevated levels of BOD, COD and Suspended Solids, and hence the characterisation of the surface water run-off generated from these hardstanding areas is deemed a 'Trade Effluent' as opposed to a relatively clean surface water run-off. As such, the surface water generated trade effluent from these types of facilities is typically not suitable for discharge to a surface watercourse without having been treated and the receiving watercourse having adequate assimilative capacity. Although the use of a Class 1 Bypass Separator for this type of trade effluent will remove most hydrocarbons, it will not reduce elevated levels of BOD, COD, Suspended Solids and nutrients. As discussed in the previous O'Callaghan Moran Associates submission the existing receiving watercourse adjacent to the site has inadequate assimilative capacity.

In Point 3 of their correspondence dated 24th October 2013, Limerick County Council have invited the application to increase the roof coverage on the site to reduce the impact and volumes of surface water mixing with residual debris from yard areas, and thereby reducing the volumes of proposed discharge to the foul water sewerage system.

JRP Integrated Engineering Ltd
Registered Office: Innovation Centre, Green Road, Carlow
Company Registration No. 519448

Directors: P McShane BEng(Hons) MIEI J Keohane BSc MSc C.Geol FCIWEM MIEI RR Matthews BSc CEng FICE
Associates: O O'Connell BA (Env. Sci.) MSc (Hydrogeology) A Whelan BSc (Hons) PG Dip (Hydrogeology)

In consideration of the existing site layout and the daily operational activities undertaken at the facility we would consider it wholly impractical and uneconomically feasible to consider roofing areas of open hardstanding yard areas at the facility.

It is considered more feasible to delineate and segregate the total site area into clean surface water run-off areas and potentially polluted surface water run-off areas where surface water run-off characterised as 'trade effluent' would be generated. Clean surface water run-off areas should continue to discharge as present to the adjacent receiving watercourses and potentially polluted surface water run-off areas should discharge to the foul sewerage system.

Figure 1 below illustrates a delineation and segregation of clean yard and roof run-off areas and potentially polluted areas that have the potential to generate trade effluent. The below segregation of clean and potentially polluted areas can be achieved by undertaking minor alterations and re-routing to the drainage system within the boundary of the site.

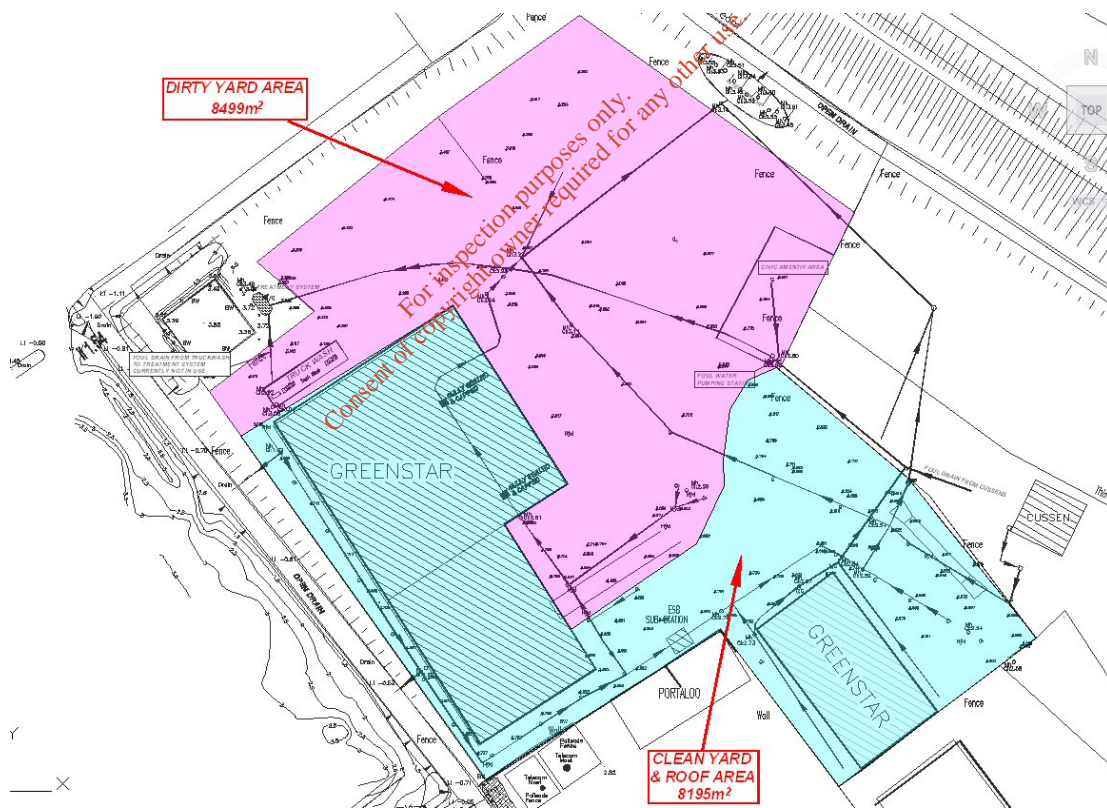


Figure 1

As illustrated in *Figure 1* above the clean yard and roof area is approximately 8195m² and the potentially polluted yard area is approximately 8499m². Considering a permeability co-efficient of 0.85 for concrete hardstanding areas, the effective potentially polluted yard area is approximately 7224m².

The amount of trade effluent generated from the potentially polluted yard area will be dependent on precipitation amounts. Considering an annual average rainfall amount of 950mm for this geographic area, the estimated average daily run-off from the potentially polluted yard area would be approximately 18.80m³ per day.

Based on a total of 22 full time and 15 part time staff at the Greenstar facility, the volume of domestic wastewater generated at the facility is in the region of 0.88m³ per day.

It is proposed to recommence truck and bin washing at the facility, which, on average, would generate approximately 5m³ of trade effluent per day.

The total average volume of trade effluent generated at the facility is therefore expected to be 18.80 + 0.88 + 5 = 24.68, say **25m³ per day**.

The actual volume of trade effluent generated at the facility will obviously depend of rainfall amounts, however in consideration of the annual average rainfall amount of 950mm for this geographic area the maximum volume of trade effluent generated at the facility on an annual basis is not expected to exceed **8040m³**.

As discussed in the previous submission from O'Callaghan Moran Associates, dated 28th August 2013, it is the intention of the landowner of the Greenstar facility, subject to local authority agreement, to construct a new foul sewer system through adjoining lands and connect to the municipal treatment plant at Bunlicky. It is therefore proposed to discharge trade effluent generated within the Greenstar facility to this new foul sewer system. Subsequently the existing on-site wastewater treatment system shall be decommissioned.

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The above proposal offers a robust and sustainable solution to dealing with trade effluent generated at the facility and is preferable to current situation where trade effluent generated from potentially polluted yard areas is discharged to a receiving watercourse with inadequate assimilative capacity. As discussed above it is considered impractical and uneconomically feasible to consider roofing areas of open hardstanding yard areas at this particular facility.

Yours Sincerely

Paul McShane

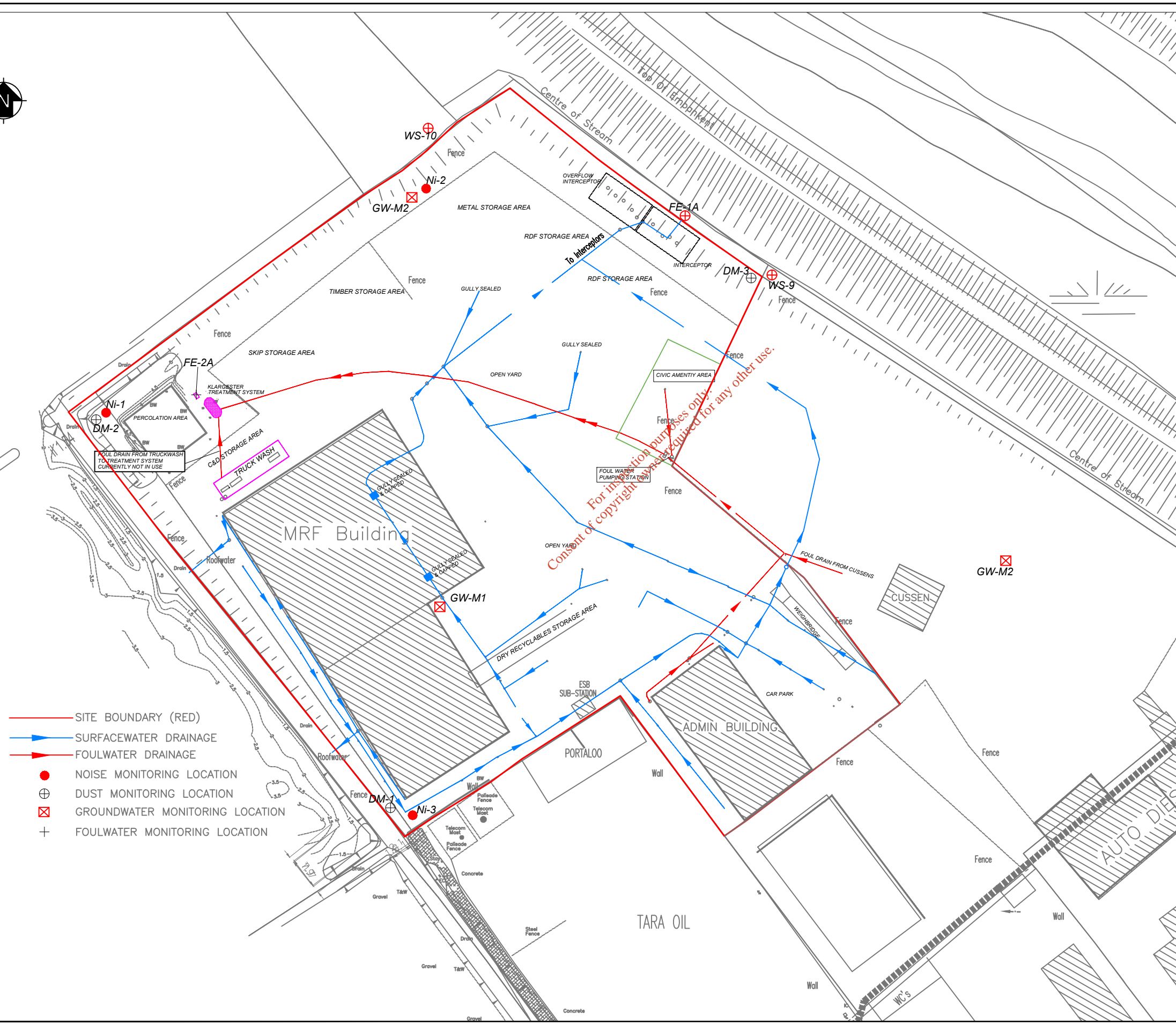


Senior Project Engineer
For IE Consulting

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Attachment 7

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NOTES

**Monitoring locations
Grid references
Eastings Northings**

DM-1	- 154913, 155617
DM-2	- 154842, 155714
DM-3	- 155003, 155750
Ni-1	- 154840, 155712
Ni-2	- 154920, 155745
Ni-3	- 154910, 155618
FE-1A	- 154974, 155769
WS-9	- 155003, 155750
WS-10	- 154922, 155776
FE-2A	- 154858, 155720
GW-M1	- 154923, 155667
GW-M2	- 154920, 155770
GW-M3	- 155049, 155684

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