

Project:

Østfold Avfallssortering IKS - MRF

Title:

APPENDIX A1

GENERAL REQUIREMENTS

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1 BACKGROUND

Østfold Avfallssortering IKS (ØAS), is a Norwegian inter-municipal company owned by five municipalities and two inter-municipal companies: Fredrikstad, Sarpsborg, Halden, Rakkestad, Hvaler, Indre Østfold Renovasjon IKS (IØR) and MOVAR IKS.

ØAS will build and operate a facility for sorting of residual waste from the households. The purpose of the plant is to get as much as possible of the residual waste into recycling. This way we will help the municipals on their way to reach the EU-targets.

The facility will be located in Fredrikstad municipality, Viken county. The plant will sort out mixed plastic, magnetic and non-magnetic metal, mixed paper (option) and organic and other fractions from fines (option). Further options may be evaluated to increase the recycling rate.

2 GENERAL OBJECTIVES OF THE PLANT

The facility will be designed to maximize the output of materials for recycling. The sorting process will be fully automated.

At household level, the inhabitants separate at home the following fraction:

- Cardboard and paper fraction,
- Food waste (organic),
- Glass and metal.
- Textiles
- EE and hazardous waste

The remaining will be delivered as residual waste to the MRF plant for sorting.

Key figures:

- Design input capacity:
 - >40 t/h
 - 60,000 t/y (one shift).
 - 120,000 t/y (two shifts)
- Fractions to be sorted out in the MRF plant:
 - Mixed plastic (2D & 3D)
 - Metal (ferrous and non-ferrous)
 - Mixed paper (option)
 - Organic and other fractions from fines (option)

The plant shall be prepared for changes in the market and future development of upstream and downstream possibilities. Hence, additional fractions may be evaluated.

3 LOCATION AND ACCESS TO THE SITE

Østfold Avfallssortering IKS will be located at Viken Park Industrial Real Estate area in Fredrikstad municipality, approximately 94 km south of Oslo, refer map below. The site is located between Fredrikstad and Sarpsborg, adjacent to the E6 motorway.

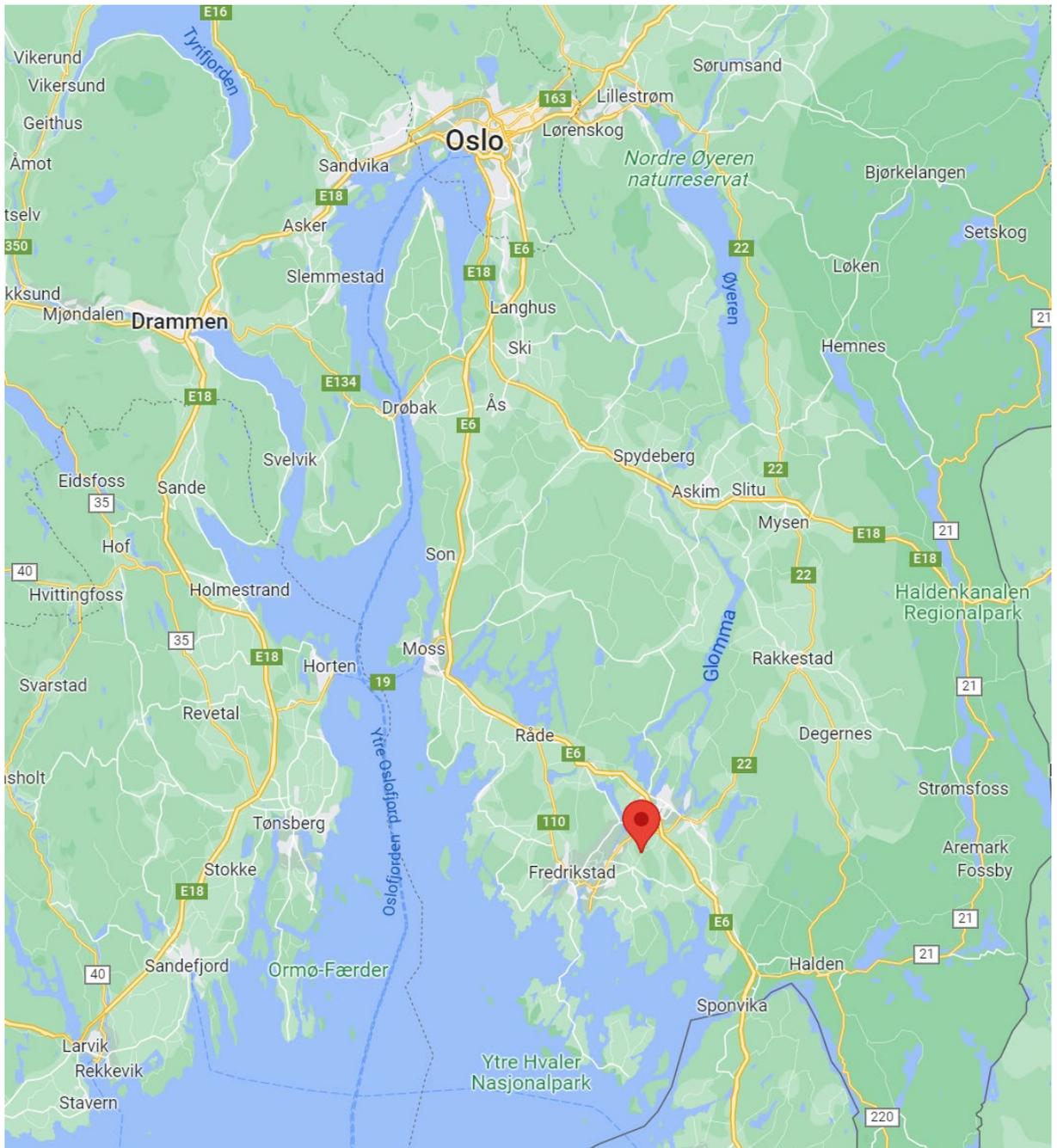


Figure 1 Map – Viken Park

The industrial area is under development and the plant will be located on a plot space of total 50 000 m². Client plan parallel activities on the same plot.

Figure 2 indicates the arrangement on the plot. The arrangement is under development and will be optimized.

For further details regarding building (area, free height etc) refer Appendix A9 and F.

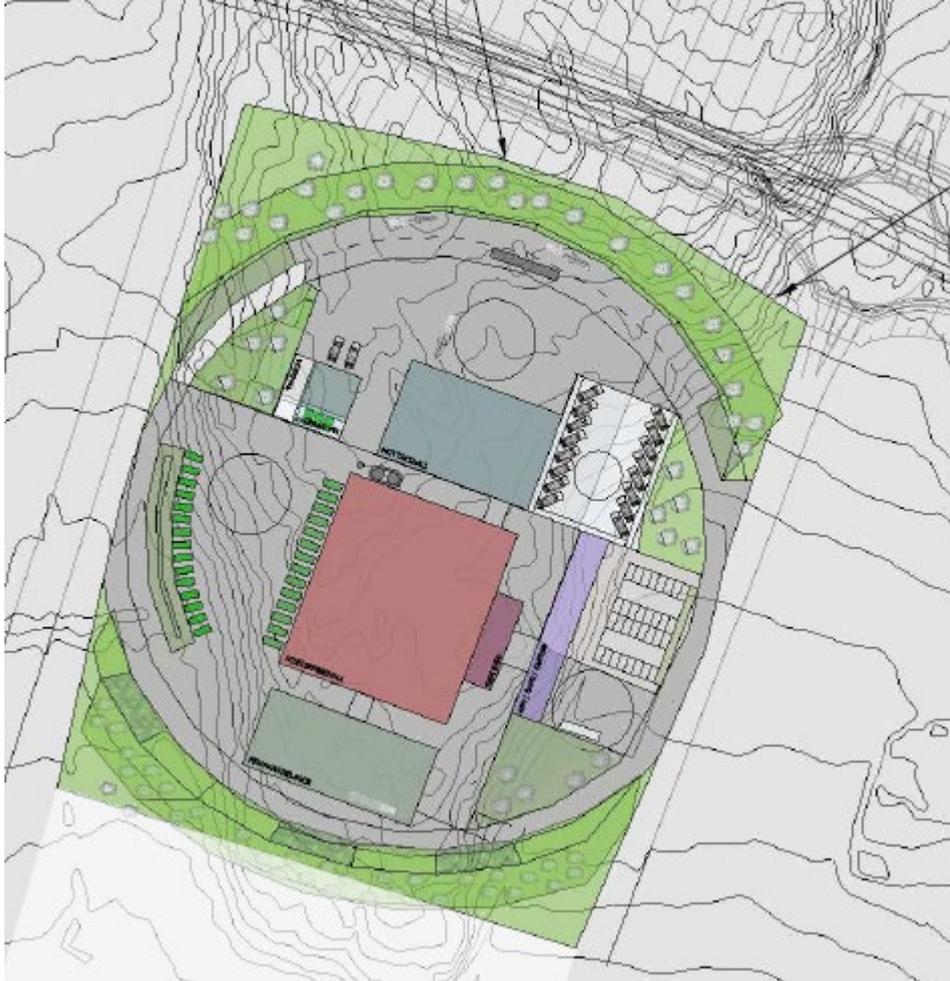


Figure 2 Preliminary arrangement of plot

4 CLIMATE

The plant and equipment shall be designed to meet the following climate conditions:

Climate at site	Max/min.		Comments
Temperature	Max, outside	35 °C	Summer
	Min. outside	-20 °C	Winter
	Max. inside	22 °C	Control room, MCC rooms, etc. (normal temp acc. to requirements in A7, A8)
		40 °C	
		40 °C	Process hall (peak summer)
	Min. inside	-10 °C	Process hall.

			Winter, without heating
	Normal inside	+5 /+25 °C	Process hall, winter/summer
Relative humidity	Max	95%	
	Min	10%	

5 DESIGN LIFTETIME OF THE PLANT

The plant shall be designed based on the following expected lifetime:

- Mechanical equipment: 20 years
- Electrical installations: 20 years

6 NOISE (outdoor/indoor)

6.1 Outdoor noise, building and installation phase

Noise from building and installation activities should normally not exceed the following limits, refer Norwegian guideline T-1442:

	Day 06.00-19.00 (LpAeq12h 07-19)	Evening, (LpAeq4h 19-23) Saturday & Sunday (LpAeq16h 07-23)	Night (LpAeq8h 23-07)
Residential area	60	55	45

If certain activities makes it necessary to exceed the limits, this should be agreed with the Client in advance.

To reduce traffic noise to the surroundings transport into or out of the plant is not allowed during the period 1900-0700 hours. Exceptions must be agreed with the Client in each case.

6.2 Outdoor noise, operation phase

Noise from technical installations, transport and commercial activities shall satisfy the requirements for noise from technical installations in Norwegian standard NS 8175, Table 4 Class C for nearby dwellings and the local environment.

The Norwegian guideline T-1442 applies.

To comply with the limits set in the guideline at the nearest residence, offices etc., the maximum noise from the finished plant in operation must not exceed the following values (distance of 1 meter from the equipment):

Outlet air outlet/stack	<L _{WA} = 85 (dB)
External, from air intake compressor room *1) and other external coolers	<L _{WA} = 65 (dB)

- *1) For normal operation of all compressors as well as regeneration of the dryer (adsorption dryer).

6.3 Indoor noise

Indoor noise is regulated by the Norwegian regulation FOR-2006-04-26-456 (Forskrift om vern mot støy på arbeidsplassen).

For the control room, offices and meeting rooms L_{Aeq} may not exceed 45 dB(A).

The noise limits to process plant are as follows:

	Noise limits (dB)
Daily noise exposure level without waste, $L_{EX,8h}$	85
Peak value of sound pressure level, $L_{pC,peak}$	130

This requirement shall be complied with at any point at a distance of 1 m or more from machine surfaces and installations. The requirements shall be complied with at the installation site, and any contributions from reflecting surfaces shall be included in the measurements. Measuring points shall be arranged at a distance of 1.0 m.

If particular equipment is not specially mentioned, it shall be constructed to emit the minimum noise.

The values quoted refer, unless stated otherwise, to the installed condition of the equipment without taking other noise sources into account. All plants and equipment shall be designed in accordance with their noise characteristics, that no individual pitches are strongly prominent.

The noise requirements shall be complied with under all normal operating conditions without waste in the plant.

6.4 Noise abatement

Noise abatement to the degree necessary shall be ensured, where technically possible, by taking measures at the actual noise source. Measures to attenuate propagated noise shall play a subordinate part. In particular, this shall be realised by an appropriate concept for the plant parameters (low rotational speeds, low flow speeds etc.) as well as by low-noise detail design.

If noise-enclosure hoods are used, easy access to the enclosed equipment shall be ensured. Machinery or equipment requiring frequent maintenance shall be made easily accessible by providing for the ready removal of hood segments without the need for tools.

Silencers in ducts and assemblies shall be so constructed that they meet the requirements of corrosion protection and their surface is adequately protected against wear.

Unacceptable high levels of structure-borne noise shall be prevented. Wall and/or floor penetrations shall, if necessary, be constructed using jacketed pipes with insulation packing so that there are no noise paths to walls and floors and noise transmission from room to room is prevented.

7 WORKING ENVIRONMENT

The Norwegian Labour Inspection Authority (“Arbeidstilsynet”) precept shall be used for designing the plant. The emittance of dust, steam and odour into the sorting hall shall be reduced to a minimum by implementing a collection and dedusting system.

The process areas shall also be easily cleaned by use of machines. As few as possible number of legs/supports onto foundations is preferred.

Contractor shall design the plant in such a way that spillage from conveyors is reduced as much as possible, e.g. scrapers on conveyors are therefore needed to keep conveyors clean.

Client will be responsible for heating. Contractor is to supply dust extraction system and ductwork from wall sorting hall to stack outlet. Air intake for the sorting hall and ventilation of technical rooms and administration (control room etc.) is by Client.

8 EMISSION TO AIR

There will be restrictions on dust and odour from this plant.

Air from the dedusting system has to be cleaned in a bag filter to achieve a dust content of max. $3\text{mg}/\text{m}^3_{\text{N}}$ air.

The odour limit is not yet decided but will be based on the emission permit for the plant.

An Environmental Impact Study will decide height of the chimney in order to be within the limits set by the Authorities. Contractor shall include a 60 meter stack in his offer. In addition to air from dedusting system, the stack shall have capacity for extracted air from reception and storage area.

9 REGULATIONS REGARDING SAFETY, HEALTH AND WORKING ENVIRONMENT IN THE CONSTRUCTION AND INSTALLATION PHASE

9.1 Use of sub-contractors

To ensure overview and knowledge about HES at the work site only a limited number of subcontractors are accepted. Under the contractual party a maximum of two (2) levels of sub-contractors are permitted (does not apply to contractors that do not perform any work at the site). All work on the site must be performed by either the Contractor who has the contract with the Client, a subcontractor (1) with an agreement directly with the turnkey Contractor or a subcontractor (2) with an agreement directly with the subcontractor (1). In addition is contractors to Contractor and Subcontractor accepted. Deviations from this must be agreed in advance with the Client.

9.2 Health, environment and security (HES) in general (see also Appendix D4)

HES denotes the sum of safeguarding both the safety, health and working environment (SHE) as well as the protection of the external environment (EE).

Regulations and guidelines relating to safety, health and working environment on building or construction sites as given by Norwegian Labour Inspection Authority (“Arbeidstilsynet”) are made applicable to this contract.

All agreements with subcontractors shall ensure conditions regarding the execution of work, conditions at the workplace, monitoring and reporting as used in this contract. See also Appendix D3.

9.3 First Aid Stations

The Prime Contractor for civil work shall establish a minimum of two first aid stations at the construction site, of which one at the barracks. Each station shall include first aid kit, eyewash kit, stretcher and fire extinguisher.

9.4 Safety Datasheets for chemicals at site

Each main Contractor must keep Safety Datasheet Register for all chemicals used at site in an updated binder in the site manager barrack.

10 REQUIREMENTS FOR THE EXTERNAL ENVIRONMENT

10.1 General environmental requirements

Environmental requirements in this document are in addition to the statutory requirements. The Contractor is obliged to comply with the criteria and requirements given by the authorities and the Environmental Management Program (Appendix D4). For any breach of current requirements and regulations pertaining to the external environment, the Contractor has the responsibility to take appropriate action without extra remuneration.

10.2 Waste

The Contractor shall prepare a waste management plan to meet the regulatory requirements as well as the requirements and objectives specific to the project:

- The generated waste from the construction and civil work shall be limited. All Contractors must consider and implement measures to reduce the amount of waste (recycling schemes, prefabrication, packaging measures etc). Amounts of waste and sorting rate shall be documented by receipts from collecting company.
- Hazardous waste must be delivered at approved recycling station. Such waste shall be securely stored, separate from other waste.

The Prime Contractor is responsible for the establishment and operation of waste management during construction. The Contractor shall establish a recycling system and document waste deliveries to attend to the requirements of the project waste management plan.

Throughout the project, the responsibility to maintain and operate waste management rests on Contractor for Civil. There shall be at least one waste station at the plant, location as agreed with the building management. Number of fractions should be adapted to the ongoing work at the plant.

Amounts of each fraction delivered the last period must be reported and accumulated.

10.3 Esthetics

Rig area shall appear neat and with a satisfactory esthetical standard.

11 REQUIREMENTS TO WORKERS ON THE CONSTRUCTION SITE

Contractors who employ foreign workers should make sure that a Norwegian- or English-speaking supervisor that can communicate with all workers is present at all times. Furthermore, the Contractor is responsible for ensuring that all the relevant SHE information is translated into language(s) that will be understood by the employees.

All workers at the construction site shall receive and sign for the basic information about the SHE requirements for the plant prior to start working at site. Contractors shall ensure that workers have the necessary skills, and certificates where required, for handling the equipment and machines in a safe manner (cf. Regulations for Execution of Work). Contractors on the construction site shall submit copies of relevant certificates and other documented training to Client upon request. Copies of certificates and other documentation must be available on site. Contractor is responsible for all employees have certificates valid for performing the work in Norway.

11.1 Identity card and staffing lists

The Contractor shall ensure that all persons performing work at the site have valid identity cards (ID cards) for construction sites before access is given to site. This includes the Norwegian HSE card.

Client is entitled both to see the individual cards and to have an overview/ documentation from Contractor on who have valid ID cards.

The SHE Coordinator shall at all times have the overview of all persons performing work on site. In order for Client to perform this task satisfactorily, Contractor shall keep daily lists with name and organisation number on all employers who performs contract work. Name, date of birth and nationality must be specified for all employees who perform contract work.

These provisions do not cover persons delivering goods and others staying only for shorter periods at the site.

12 RIGGING AND OPERATION OF THE SITE

12.1 General - rigging and operation

Contractor must act considerate and plan the work to prevent damage to other equipment and constructions. Any damage must be corrected immediately by Contractor, without any cost for Client.

Each contractor is responsible for their own rig at the construction site.

12.2 Plant limitations and rig area

There is limited area that can be used for rigging and operation, and it is not allowed to use any area that lies outside the defined rig area.

The rigging plan will specify the areas for barracks, common areas managed by the construction manager and the areas used by the various contractors.