
POPs stockpile Merkim site, Kocaeli, Turkey

**Detailed site survey/assessment, operational planning,
environment/safeguards assessment, training and supporting
technical supervision related to the removal of POPs**

**Sub Task 4.2b Terms of Reference for main disposal of
POP-pesticides waste stockpile**

27 July 2017

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Reference R011-1239389GMC-los-V03-NL

Responsibility

Title	POPs stockpile Merkim site, Kocaeli, Turkey
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Colophon

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- 1 Environmental Management Requirements
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1 General

1.1 Project Background

This document is part of the deliverable of Sub Task 4.2; the preparation of tender documentation inputs to be used by UNDP and the site owner (Merkim) in developing the tendered Terms of Reference applicable to the various stages of the elimination of the POP-pesticides waste stockpile and associated wastes on the Merkim site in Kocaeli, Turkey. The works are part of GEF/UNDP POPs legacy Elimination on POPs Release Reduction Project'.

This document is the second document of a series of four documents that in total comprise of all on-site works necessary for the complete removal of the POP-pesticides waste stockpile and associated wastes from the site. The full set of documentation consists of the following documents:

- Proposed Terms of Reference for preliminary works (Task 4.2a)
- Proposed Terms of Reference for main disposal of POP-pesticides waste stockpile (Task 4.2b) the document at hand
- Proposed Terms of Reference for removal and collection of POP-pesticides impacted wastes retained in walls and floors (Task 4.2c)
- Proposed Terms of Reference for demolition of buildings after removal of POPs Pesticide impacted wastes (Task 6)

1.2 Document status and structure

This document is intended to serve as the main input for the Terms of Reference main disposal of POP-pesticide waste stockpile, which will be developed in final form by UNDP Turkey. The main disposal of POP-pesticide waste stockpile entails the collection, repackaging, removal from the site, off-site transport and environmentally sound disposal of all POPs wastes present inside the warehouses at the Merkim site, with this document covering the collection packaging and removal from the site. In this document the general background of the project and definitions/abbreviations used are presented in this first chapter. The subsequent chapters follow the UNDP format for Terms of Reference of POP-pesticides stockpile disposal projects.

1.3 Definitions

Explanations of all important definitions and abbreviations used in this document are provided in the following Sections. The first Section defines the most important terms used in this document. Definitions are further highlighted in footnotes at their first occurrence in the document itself.

In this document, unless further explained in the context of the sentence itself, the term project refers to the on-site works and related activities associated with the collection, packaging and removal of POPs waste/impacted waste.

1.3.1 Definition of POPs and POP-pesticides

- POPs are all those chemicals that have been identified in all applicable annexes of the Stockholm Convention on Persistent Organic Pollutants
- POP-pesticides are those pesticides chemicals that have been included in the Stockholm Convention on Persistent Organic Pollutants specifically Annexes A and B

1.3.2 Definition of wastes present at the site

- POP wastes are all materials that have a POP-pesticides chemical and associated congener concentration above 5,000 ppm or 5,000 mg/kg dry matter for solids
- POP impacted wastes are all materials, including site building materials, that have a POP-pesticides chemical and associated congener concentration between 50 and 5,000 ppm or 50 and 5,000 mg/kg dry matter or of which can reasonably assumed that they contain concentrations between these mentioned values
- Non-POP impacted wastes are all materials that have a POP-pesticides chemical and associated congener concentrations below 50 ppm or 50 mg/kg dry matter

1.3.3 Definition of operations

The following six types of operations are covered in the document:

1. **Processing** of POP wastes and POP impacted wastes are all operations, either chemical or mechanical, where the POP wastes and / or POP impacted wastes are taken from their original condition and transferred into another condition. In this, condition is a broad term including their original packaging, physical and chemical condition:
 - a. Typical processing activities of POP wastes and POP impacted wastes at the site include but are not limited to:
 - i. Re-packing of materials
 - ii. Shredding, crushing or compacting of materials
 - iii. Vacuum cleaning or brushing of materials
 - iv. Assisted drying of materials
 - v. Operations where the initial state of the materials is physically altered such as removal of contaminated blocks from the walls or the mechanical excavation of POP wastes with an excavator

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2. **Handling** of POP wastes and POP impacted wastes are all operations where the materials are stirred or touched without transforming their condition
 - a. Typical handling activities of POP wastes and POP impacted wastes at the site include but are not limited to:
 - i. Manual collection of secure individual bags with POP wastes without damaging the bags (irrespective if these are new or old bags)
 - ii. Labelling of materials
 - iii. Sampling of materials
 - iv. Weighing of materials
 - v. Movement of non-repacked materials or bulk containers with loose materials in the indoor areas of the site
 3. **Movement** and transfer of POP wastes and POP impacted wastes are all operations where materials are (re)moved, both horizontally and vertically in a contained form without transforming their state
 - a. Typical movement activities of POP wastes and POP impacted wastes at the site include but are not limited to:
 - i. The movement of POP wastes or POP impacted wastes repacked in UN approved packaging materials and/or containers
 - ii. The indoor movement of POP wastes or POP impacted wastes for further processing or final packaging. Transfer of these wastes is inside a form of interim containment such as covered (flexible) bulk containers. Where the movement of POPs wastes or POPs impacted wastes causes cross-contamination of surfaces or air due to fugitive emissions or spreading of dust it is considered processing and will require the associated more stringent health and safety precautions
 - b. The following operations are not included in the movement of the POP wastes and POP impacted wastes but are rather considered handling or processing of the materials:
 - i. Movement of materials in uncontained form such as on conveyor belts
 - ii. Movement of materials in packaging that does not comply with ADR regulations for transport of hazardous wastes (except those mentioned under point 3a ii)
 4. **Off-site removal** is the transportation of POP wastes and POP impacted wastes loaded/secured in accredited, documented and approved vehicles for transport of hazardous wastes on public roads
 5. **(Interim) Storage** of POP wastes and POP impacted wastes are all operations where the materials are securely stored at the site or in an accredited facility for the storage of POPs in their modes of off-site transport
 6. **Staging** of POP wastes and POP impacted wastes is the collection of materials, packed in their modes of off-site transport, at a location prior to the regrouping of the materials for further transport

7. **Demolition** is the deliberate destruction of structures at the site not being POP wastes or POP impacted wastes

1.3.4 Definition of the project area

The definition of the project area is as follows:

- The site is Deniz mah. Petrol Office street Derince-Kocaeli, cadastral annotation is layout no: 73, Plot no: 50, Parcel no: 34
- Indoor areas of the site: All interior parts of the enclosed buildings on the site¹
- Outdoor areas of the site: All parts of the site not included in the indoor areas of the site
- Site access (incoming and outgoing) to public roads inclusive of local traffic planning and control

1.3.5 Definition of zoning

Definition of zoning is the division of the site into areas where similar protocols and procedures for the work apply. In this project, zoning is primarily focused on Health and Safety Aspects. The Occupational Health and Safety Plan (HASP) guidelines (Appendix 3) provide a possible site zoning set-up.

1.3.6 Definition of environmental indicators

- **Area of high potential workplace airborne particulate.** Areas of the site where airborne total particulate concentrations exceed 50 mg/m³² at any moment during an 8 hour work day, based on continues measurements done at 1.5 m above the site floor within 5 m of airborne particulate generating machinery

1.3.7 Contract Implementation Parties

- **Contracting Party** is UNDP Turkey Country Office
- **Proposer** is the party submitting a financial and technical proposal in response to a request for proposal (RFP) issued by the Contracting Party
- **Contractor** is the qualified hazardous waste management service provider selected to undertake the work defined in an RFP issued by the Contracting Party
- **Contracting Party's Representative** is the appointed on-site representative of the Contracting Party during the contracting period
- **Contractor's On-site Supervisor** is the Contractor's appointed on-site representative having authority for direction of the on-site work implemented by the Contractor

¹ With the exception of the decontamination unit and any buildings added after 31 December 2016 which are not connected to the existing indoor parts of the site – included as Tauw corporate policy requirement

² 50 mg/m³ is chosen as it is the Immediate Dangerous to Life or Health Concentrations (IDLH) limit set for Lindane by the Canadian National Institute for Occupational Safety and Health <https://www.cdc.gov/niosh/idlh/58899.html>

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1.4 Abbreviations

Table 1.1 provides an overview of used abbreviations in the document.

Table 1.1 Overview of abbreviations

Abbreviation	Explanation
ACM	Asbestos Containing Materials
ADR	European Agreement concerning the International Carriage of Dangerous Goods by Road
BAT	Best Available Techniques
BEP	Best Environmental Practise
BREF	BAT Reference documents
DDT	Dichlorodiphenyltrichloroethane
DE	Destruction Efficiency
d.m.	Dry matter
DRE	Destruction Removal Efficiency
EC	European Commission
EMP	Environmental Management Plan
ERP	Emergency Response Plan
ESIA	Environmental and Social Impact Assessment
ESM	Environmentally Sound Management
EU	European Union
EWP	Execution Work Plan
FIBC	Flexible Intermediate Bulk Container
GEF	Global Environment Facility
HASP	Health and Safety Plan
HCH	Hexa Chloro cyclohexane
HDPE	High-Density Polyethylene
HTI	High Temperature Incineration
IBC	Intermediate Bulk Container
IDLH	Immediate Dangerous to Life or Health Concentrations (Canadian National Institute for Occupational Safety and Health)
IMDG	International Maritime Dangerous Goods Code
IPPC	Integrated Pollution Prevention and Control
MoEU	Ministry of Environment and Urbanisation
PE	Polyethylene
PM	Particulate Matter

Abbreviation	Explanation
POP	Persistent Organic Pollutant
PPE	Personal protective equipment
PVC	Polyvinyl Chloride
RID	International Carriage of Dangerous Goods by Rail
TCP	Traffic Control Plan
TP	Transport Plan
UN	United Nations
UNDP	United Nations Development Programme
WI	Waste Incineration

2 Context

This section of the Proposed Terms of Reference defines the general background, scope of work, technical/environmental protection requirements and Contractor's responsibilities for work to be undertaken under a tender and subsequent contract related to main disposal of POP pesticides waste stockpile as defined herein.

As a general background, the overall objective of the Merkim project is to optimize global environmental benefits by eliminating the POPs stockpiles and associated contaminated materials from the Merkim warehouse site. This Terms of Reference deals with removal of the main POPs stockpiles and associated POPs impacted wastes present in the site warehouse.

2.1 Merkim site description

The Merkim site is located in the Sirintepe Region of Derince town in Kocaeli province, Western Turkey. Derince is a coastal town on the Northern shore of Izmit Bay. The official address of the site is Deniz mah. Petrol Office Street Derince-Kocaeli. The cadastral annotation is: Layout no: 73, Plot no: 50 and Parcel no: 34. The location of Merkim POPs wastes stockpile site in Kocaeli, Turkey is shown in Figure 2.1.

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Figure 2.1 Location of Merkim POPs wastes stockpile site (Source: Google Maps, 19 January 2017)

Approximate height of the site is 4-5 m above sea level. The site itself is located in an oxbow of the entry road to an industrial zone. The planning status of the site is Industrial Land; there are no land-use restrictions for the area.

The Merkim site is approximately 8,000 m² in size and consists of six interlinked warehouses surrounded by mostly unpaved outer areas. The entire site is enclosed by a 3 m high barbed wire fence in good condition. There is one main entrance to the interlinked warehouses; all other entry points have been sealed off. The outside walls and doors, except the main entrance, of the warehouses are sealed with foam to reduce odour nuisance for the surrounding areas.

Of the six interlinked warehouses (see Figure 2.2). Four warehouses (no 3, 4, 5 and 6) have the same configuration (20x30 m) with a maximum ceiling height of 8.18 m. The two Northern most warehouses (no 1 and 2) are smaller in size.

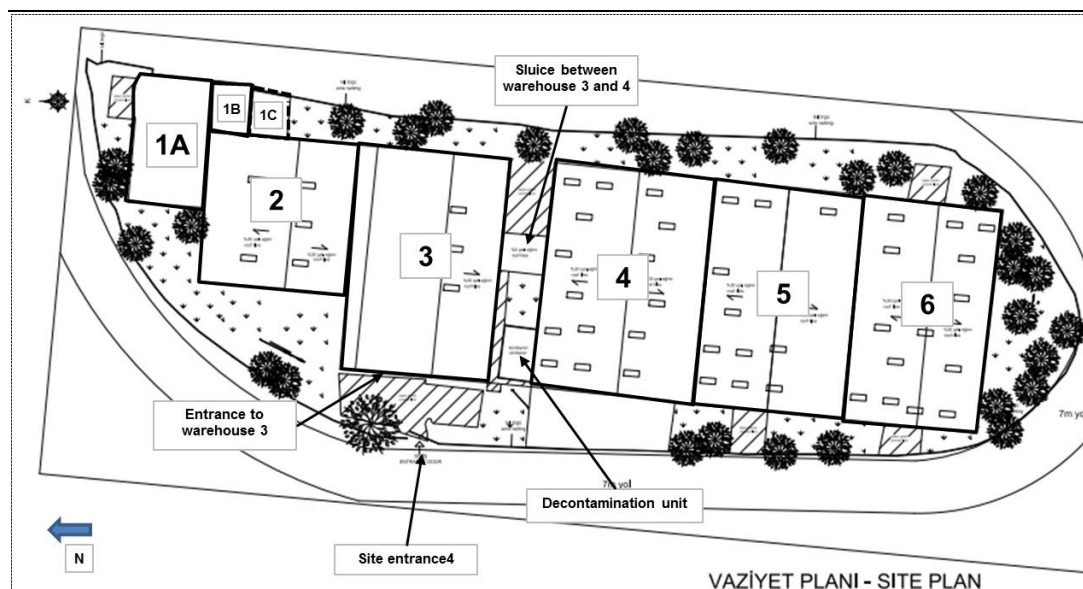


Figure 2.2 Site layout with indication of warehouse numbers and main features of the site

Inside the warehouses, POPs wastes are present in stockpiles, part of the POPs wastes is present in plastic packaging materials (PE bags, paper bags with plastic liners) and part of the POPs wastes has been repacked in metal open head drums mainly of 200 litres. The POPs wastes are stored under substandard conditions, the warehouses are leaking and the entire warehouse is covered in a layer of POPs wastes dust.

All warehouse floors have a layer of cemented POPs wastes and are covered in POPs wastes dust as well as the walls, the rafters of the roof construction, the concrete pillars of the building skeleton and all equipment and other materials present. Total quantity of POP-pesticides and POP-pesticides impacted materials is approximately 2,700 tons.

2.1.1 Status of warehouses after preliminary works

Prior to the start of the main repacking and disposal of the POPs stockpiles a preliminary works assignment will be undertaken as administered and as required contracted by the site owner (Merkim). This assignment will prepare the site to create space for the temporary storage and handling of repacked POPs wastes and the loading of POPs wastes within the confines of the site boundary itself.

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Warehouses 1-3 will be cleared of all POPs wastes and loose POPs impacted wastes and will be left after a thorough surficial cleaning including the floors and walls. Due to the prolonged exposure of the warehouse walls and floors to POPs stockpiles the walls and floors will be, contaminated with POPs even after cleaning. The storage/handling area created within warehouses 1-3 is seen as part of the contaminated inner parts of the warehouses and working inside these areas is subject to health and safety standards, POPs dust formation in the area is however minimal. The demolition and disposal of the POPs impacted floor and wall materials will be covered by a separate technical specification report (part of a separate works package (Sub-Task 4.2 c).

Warehouses 1-3 will be empty except for:

- Metal drum filling station (to be used at the contractor's election or otherwise decontaminated and removed by Merkim)
- Washing basin for cleaning of equipment and machinery leaving the site
- Dust curtains
- Groundwater extraction well present in warehouse 2 which will be removed and closed at the surface
- Materials lock (a separate corridor created for the transfer of the repackaged wastes from the inner to the outer parts of the site to avoid the spreading of dust).
- Protective sheets and plywood on site surface

The outside areas of warehouses 2-4 will be upgraded to allow for loading of POPs wastes onto trucks within the confines of the site. This will include the following:

- Extension of concrete floor in front of warehouse 3 entrance
- Installation of 20 cm thick gravel layer next to warehouses 2, 4 and 5 (partially)
- Subsurface closure of extraction wells
- Removal of trees along west side of the site
- Installation of mobile fences and gates along the west side of the site

The following figure (Figure 2.3) shows the site status of the Merkim site after completion of the preliminary works. The site owner (Merkim) will be provided with as-built records after finalization of the preliminary works and relevant local contact information to ensure continuity of external communication and any relevant arrangements.

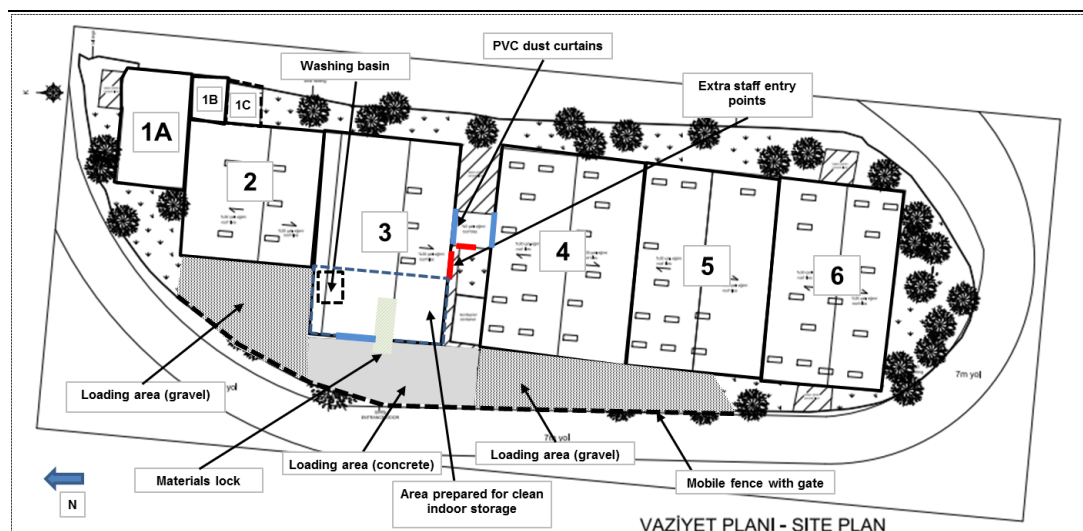


Figure 2.3 Site layout after finalization of preliminary works

2.2 Contamination situation

POPs wastes³

All materials inside the warehouses prior to undertaking preliminary works, including the concrete floors, the walls of warehouses and the soil underneath the floor are impacted by the long term storage of POPs wastes. Direct and indirect contact with the building inside, the soil around and under the warehouses and the waste materials may cause exposure to high concentrations of POPs wastes.

Representative POPs waste samples from the six different warehouses were analysed for α -HCH, β -HCH, γ -HCH, δ -HCH, 2,4'-DDT, 4,4'-DDT and 4,4'-DDD. According to the analytical results, all materials encountered inside the warehouses are POPs wastes. In most cases it concerns HCH production wastes with a purity of approximately 40 % (i.e. 40 % of the material is POPs, 60 % is inorganic mixture/filler). Limited quantities of the POPs wastes are Technical HCH and DDT end products. Other materials inside the warehouses, machinery as well as the floors and the walls are covered in layers of POPs wastes particulate matter. These materials should as such, from a health and safety perspective, be treated as if they are POPs wastes, notwithstanding that the concentration of POP-pesticides in these materials varies between 5-500 mg/kg. This is the POPs content after removal of superficial dust.

³ Definition of POPs wastes in this document is: All materials that have a POP chemical and associated congener concentration above 5,000 ppm or 5,000 mg/kg dry matter for solids

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In this document, materials covered in a layer of POPs wastes that cannot be sufficiently cleaned are classified as POP impacted wastes⁴.

Concentration of POP-pesticides in the soil outside the warehouses is 0.3-1,800 mg/kg with highest concentrations near the current site entrance. This will be subject to future site remediation activities outside the scope of the current UNDP/GEF POPs stockpile elimination scope.

Asbestos

Each warehouse has a gable roof made out of asbestos corrugated sheeting mounted on steel rafters, the rafters are resting on reinforced concrete skeleton of the building. The roof consists of Asbestos cement corrugated sheets with 10-15 % of the material consisting of Chrysotile asbestos. Between Warehouse 3 and 4 is a narrow corridor made of asbestos sheets with a roof made out of corrugated iron sheeting. Limited quantities of broken asbestos roof sheets are mixed with POPs wastes and present on the site floor, the majority of these asbestos materials will be removed during the preliminary site works. Presence of asbestos sheets underneath or between the POPs stockpiles are unlikely but cannot be excluded.

2.3 Wastes overview

The following table (Table 2.1) contains an overview of the estimated POPs wastes included in the main disposal of POP-pesticides waste stockpile works. For a detailed overview of the site characteristics and wastes quantities refer to the Site Description Survey and Assessment Report⁵, noting that this document also covers the estimated quantities of POPs waste and POPs impacted waste covered under the scope of preliminary works (Sub-task 4.2a) and addressing contaminated walls and floors (Task 4.2c).

⁴ Definition of POP impacted wastes in this project is: All materials, including site building materials, that have a POP chemical and associated congener concentration between 50 and 5,000 ppm or 50 and 5,000 mg/kg dry matter or of which can reasonably assumed that they contain concentrations between these mentioned values

⁵ POPs stockpile Merkim site, Kocaeli, Turkey, Task 2: Site Description Survey and Assessment Report (Tauw, R003-1239389GMC-beb-V02-NL d.d. 23 January 2017)

Table 2.1 Overview of Estimated POPs wastes quantities included the main disposal of POP-pesticides waste stockpile works based on Site Assessment Studies

Location	Form of wastes	Quantity (m ³)	Total weight (tons)
Warehouse 4	HCH production wastes (dry)	241.26	180.87
Warehouse 4	HCH production wastes (wet)	26.81	34.91
Warehouse 4	Technical HCH (dry)	42.35	31.75
Warehouse 5	HCH production wastes (dry)	483.13	362.20
Warehouse 5	HCH production wastes (wet)	53.686	69.91
Warehouse 6	HCH production wastes (dry)	1,475.97	1,106.54
Warehouse 6	HCH production wastes (wet)	163.996	213.57
Warehouse 4	HCH production wastes on floor		0.96
Warehouse 5	HCH production wastes on floor		3.9
Warehouse 6	HCH production wastes on floor		3.9
Total			2,008.51

Not included in the POPs wastes tables above are any wastes (i.e. waste water, PPE) generated during the contractor's operations on site and which the contractor will be also responsible for.

3 General scope of works

It is understood that the overall scope of work covered by the TOR, to be finalized by UNDP for tendering and contracting, will be the on-site operations covering the repackaging, loading and removal of POPs waste stockpiles and POPs impacted waste listed in table 2.1. These works on the Merkim site include environmentally sound management (ESM) of all POPs wastes present at the Merkim site. After removal of the POPs stockpiles, the site floors and walls will be cleaned and the site is ready for the removal of the contaminated walls and floors. As noted above, The demolition and disposal of the POPs impacted floor and wall materials will be covered by a separate technical specification report (part of a separate works package (Sub-Task 4.2 c).

For purposes of this TOR a total potential estimated quantity of 2,008.51 tonnes (t) of POPs wastes are included for packaging, loading, removal and disposal. In addition to the POPs wastes, limited quantities of POPs impacted wastes (such as used PPE or water used for cleaning of equipment) as generated by contractor operations are to be removed for environmental sound disposal.

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The overall scope of work involved under this contract is summarized in Table 3.1, Chapter 5 goes into more detail on the items #'s 1 thru 6 mentioned in this table with items 7 and 8 included for information noting that these activities are not covered by this report.

Table 3.1 Overall scope of work

Item no.	Description	Unit	Estimated Quantity
1	Set-up mobile project office	n/a	n/a
2	General project preparation and zoning preparations	n/a	n/a
3	Installation of dust limitation measures	n/a	n/a
4	Drying of POPs wastes	n/a	n/a
5	Repacking and removal of POPs wastes from Warehouse 4, 5 and 6 including preparation for transport off site (loading)	t	1,999.75
6	Cleaning of floors and walls in Warehouse 1-6	t	8.76
7	Off-site transport to waste disposal facility of POPs wastes (not covered in this report)	t	2.008.51
8	Final disposal of POPs wastes (not covered in this report)	t	2.008.51

4 Organisation of the works

In this chapter, the Contractor requirements from an organisational point of view are provided. Contractor shall document the works and its organisation in his Execution Work Plan (EWP). The required contents of the EWP are given in Chapter 7.

4.1 Communication requirements

The Contractor communicates during all works in open and structured way with the Contracting Party. Requirements on communication with the Contracting Party and other communications are formulated in Table 4.1. The Contractor must demonstrate that this complies with these requirements.

Table 4.1 Communication requirements

No.	Requirement
4.1.1	The Contractor timely communicates the exact starting date of the works to the Contracting Party. The Contractor is responsible for the communication to the authorities, the site owner and other interested parties. The Contractor communication efforts are supported (but not financially) by the Contracting Party
4.1.2	The Contractor provides a readily accessible telephone number and electronic coordinates for questions and complaints for the public. Complaints and follow-up actions should be registered and communicated to the Contracting Party. Complaints have to be on the agenda of all project progress meetings
4.1.3	As part of the EWP the Contractor develops a communication protocol for: <ul style="list-style-type: none"> • Communication to Contracting Party, Site Owner, and (Sub)Contractors • Communication to the public (neighbouring sites) with special attention to the Mosque and restaurant next to the site • Communication with the utilities concessionary • Communication with the licensing authorities • Time and frequency of communication • Way of communication • Procedure for handling complaints
4.1.4	If required by the Contracting Party, the Contractor participates in information events during the project to inform the public on the project progress
4.1.5	The Contractor must obtain written permission from neighbouring sites before using their property for parking, storage, idling et cetera. Permissions are to be included in the Traffic Control Plan (TCP)

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4.2 Project site management requirements

The Contractor is responsible for the quality control of all works including the works of his Subcontractors. The Contracting Party relies on the certified EN-ISO 9001:2008/2015 or an equivalent quality management system of the Contractor. Requirements on management are formulated in Table 4.2. The Contractor must demonstrate compliance with these requirements.

Table 4.2 Project site management requirements

No.	Requirement
4.2.1	During the works execution phase, the progress of the works should be evaluated monthly. The project team is formed by representatives of the Contractor, Contracting Party and site owner
4.2.2	The Contractor keeps minutes of all project meetings
4.2.3	The Contractor must implement a working permit procedure. The procedure should be in line with the Turkish legislations and regulations
4.2.4	Working permits should be arranged by the Contractor for all staff present on the site
4.2.5	The work permit should at least contain: <ul style="list-style-type: none"> • Place • Type of action(s) • Planning • Period of validity • Number of people and names involved • Name of the Contractor's On-site Supervisor • Zone clearance • PPE to be used and other safety measures implemented • Name and signature of the Contractor's On-site Supervisor
4.2.6	Contractor has in place a Personnel Site Access Control system
4.2.7	Contractor keeps a permits overview including dates issues and validity present at the site at all times. Documents should be made available to contracting party's representative upon request within 24 hrs.

4.2.1 Technical management requirements

The Contractor technically manages all works and is responsible for the technical quality control of the works. The Contracting Party and/or its representative may check the Contractors' measurements, analyses, et cetera, by taking control measurements. The costs for these duplicate control measurements will apportioned between the Contractor and Contracting party dependant on the circumstances in cases where compliance is in dispute.

The Contractor documents the quantity, type and weight of all materials that are to be used in the indoor parts of zone 2 and 3 of the site. The Contractor documents the quantity, type and weight of all wastes transported off-site.

4.2.2 Planning requirements

The Contractor plans all work. Planning requirements are formulated in Table 4.3. The Contractor must demonstrate compliance with these requirements.

Table 4.3 Planning requirements

No.	Requirement
4.3.1	The Contractor sets up, checks and implements a detailed project plan based as documented in the agreed EWP. Separate planning is presented to the Contracting Party for: <ul style="list-style-type: none"> On-site works Permitting Initiation of removal/transportation External communication
4.3.2	The Contractor must provide the Contracting Party an updated detailed project plan within 5 days after the planning has been changed for on-site works, permitting and removal/transportation
4.3.3	The Contractor must provide the Contracting Party an updated EWP within 1 month after the detailed project plan has been changed
4.3.4	The Contractor provides the planning digitally and as a hard copy to the Contracting Party

4.3 Risk Management

The Contractor is responsible for active risk management of all works. Requirements on risk management are formulated in Table 4.4. The Contractor must demonstrate compliance with these requirements.

Table 4.4 Risk management

No.	Requirement
4.4.1	Risk management for the site is a cyclic process. During the complete execution of works at the site, the Contractor keeps assessing, analysing and updating the risks in a risk register / document
4.4.2	The Contractors updates the risk register / document at least every 4 weeks
4.4.3	The Contractors includes risks, prescribed by the Contracting Party and other project stakeholders in the risk register / document
4.4.4	The Contractor implements risk reduction measures to remove, control or reduce the risks

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In the EMP-requirements and Occupational Health and Safety guidelines, the results of the risk assessment carried out for the Contracting Party and which form part of its safeguards documentation is presented.

4.4 Emergency response requirements

Contractor is responsible to have in place adequate emergency response procedures at the site. The Emergency Response Plan (ERP) will form part of the EWP and should describe emergency response procedures in detail. In addition to the procedures, Contractor shall have in place adequate emergency equipment including but not limited to an emergency response kit for accidental spills of both solids and liquids in the outdoor and indoor part of the site, and which is accessible for emergency response in the immediate vicinity for transportation related incidents. Contractor shall ensure that adequate first aid provisions, emergency response PPE and fire fighting equipment is present at the site for the entire duration of the works. Contractor shall have in place a communication system to allow for warning/notification of staff working in other zones without entry to the zone. Likewise communication provision for warning/notification/call out of local public or other locally available emergency response capability is provided for.

Contractor must have a response time in case of emergencies at the site of maximum 1 hour. This precondition is valid 24 hours per day, 7 days a week for the duration of the works on site. The person who responds to the emergency must be qualified personnel, knowledgeable of the emergency response plan and proficient in Turkish language.

4.5 Quality control requirements

The Contractor is responsible for quality control of all works. The quality of the Contractors' work (i.e. whether Contractor is in compliance with current legislation, protocols, certificates, et cetera) may be audited/checked by the Contracting Party and/or its representative, MoEU and UNDP Project Team. Requirements on quality control are formulated in Table 4.5. The Contractor must demonstrate compliance with these requirements.

Table 4.5 Quality control requirements

No.	Requirement
4.5.1	Contractor is certified conform EN-ISO 9001:2008/2015 or equivalent for the contract duration. The certificate must be issued by an authorized certifying organization and be applicable to this scope of work.
4.5.2	<p>As part of his EWP the Contractors develops quality control plan that contains at least:</p> <ol style="list-style-type: none"> 1. Description of measures that will be implemented to insure the quality of the performance 2. Realization, organization, personnel and materials: <ul style="list-style-type: none"> • Members of project team, tasks, and responsibilities • List of Subcontractors and their certificates • Planned zoning of the working area, and differentiations in the different project phases as applicable. • Materials used for different specialized aspects of the works
4.5.3	<p>All equipment that is to be used on-site should be checked by the Contractor on the following aspects:</p> <ul style="list-style-type: none"> • Ownership documentation • Insurance • Maintenance logbook • Technical conditions • Operational conditions • HSE-conditions for the operator • Operator's skills, qualifications and licences/permits as applicable • Operator's physical condition

5 Technical requirements

5.1 General

This section describes in more detail the on-site activities within the scope of activities at the Merkim site as itemized in Table 3.1. All work will be executed in accordance with the practices and procedures defined in the agreed Execution Work Plan (EWP), inclusive of the requirements for site arrangements, equipment used, agreed EMP, HASP, ERP and TCP noting that guidance on the EMP requirements are provided in Appendix 1 and 2 respectively, and as explicitly specified in Chapter 5 for environmental requirements and for the Health and Safety requirements in Chapter 6. Requirements associated with these works are given in the remainder of this chapter. Provided quantities in this chapter are based on the site investigation report and should be seen as an accurate estimate.

Item 1: Set-up mobile project office

A mobile project office, with at least a separate office room for the Contractor and Contracting Party's representative/supervision should be set-up in such a way that it oversees the entrance at Warehouse 3 and the loading area. Space for this office is limited to a narrow strip just north of the current entrance or across the street at the site of the Mosque or truck rest area (subject to land owner permission).

The following preconditions for the site office apply:

- Should include a kitchen and toilet
- Should have a separate room for Contracting Party's Representative⁶ including a desk and chair
- Should have a space for meetings of up to 8 people
- The offices should be sufficiently isolated to deal with the local climate and allow for working indoor ambient temperatures of 18-24 degrees

The following services should be provided during the works:

- 230 V, 50 Hz AC power with adequate earthing protection
- Potable water
- Sewerage disposal
- Maintenance cleaning on working days

⁶ **Contracting Party's Representative** is the appointed on-site representative of the Contracting Party during the contracting period

- Consumable materials like one-way hand towels, soap, soap dispenser, paper et cetera during the whole operating time

Item 2: General project and zoning preparations

This item includes general project preparations for the Contractor to be able to start the repacking of the POPs stockpiles. At the site, a decontamination unit is present which has been used for the execution of the preliminary works. Outside the unit an emergency shower, boot wash station and PPE waste disposal facility (drum or similar) are present. It is the Contractor's responsibility to ensure that these facilities are suitable and operational for the duration of the works. Access to the decontamination unit should be made in such a way that no crossing of zoning (see Chapter 6) takes places.

The following preconditions for the decontamination unit apply:

- Should have working toilet and shower facilities
- Should have a working shower
- Should have a working emergency shower outside the unit
- Should have a working toilet
- Should have a working washing basin

The following services should be provided for the decontamination unit during the works:

- 230 V, 50 Hz AC power with adequate earthing protection
- Water for showers and toilet
- Potable water for washing basin
- Sewerage disposal
- Maintenance cleaning on working days
- Consumable materials like one-way hand towels, soap, soap dispenser, paper et cetera during the whole operating time

A washing area and waste water collection point is installed during the preliminary site works. Location of the washing area is in the North-West part of warehouse 3 (see Figure 6.1). Contractor is to ensure that the washing area is operational. Contractor is free to move the washing basin to any location within the site itself.

The following services should be provided for the washing basin during the works:

- Maintenance and operation of washing area
- Water in sufficient supply to allow for pressure cleaning
- Pressure washer (minimum 110 bar / 11 MPa, 240 l/hr flowrate)
- Cleaning of equipment and materials leaving the site
- 230 V, 50 Hz AC power with adequate earthing protection

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For the duration of the works, Contractor is expected to enforce a strict zoning (see Section 6.2). Contractor can use the zoning installation left after the preliminary works or can suggest his/her own zoning for installation/modification as part of his scope. The site zoning can be demarcated by empty drums filled with water and connected to each other with demarcation tape. Entry and exit points to the warehouses should include a double dust curtain and dry boot brush.

Entry points will be made by removing the buildings blocks with drywall drill or similar equipment. Building blocks will be kept inside the warehouse till further processing. A double dust curtain will prevent dust from exiting through the new entry and exit points.

The following works and materials are included in this item:

- Installation of face fitted double strip dust curtain for closure of newly created entry points.
Strip curtains should have full overlap
- Placement of empty plastic drums and filling of drums with water
- Installation of demarcation lines
- Placement of zoning signs (20x30 cm) with zoning requirements at all entry and exit points to zoning areas
- Installation of two dry boot brushes
- Installation of two wet boot cleaning stations

The following services should be provided during the works:

- Maintenance of wet boot washing station including off-site disposal of collected water
- Maintenance of dry boot washing station
- Maintenance of strip dust curtains

Item 3: Installation of dust limitation measures

Prior to the start of the repackaging works, dust limitation measures should be implemented to prevent the escape of particulate matter from the contained indoor parts of the warehouse to the outer areas.

The following services should be provided during the works:

- Maintenance of dust curtains
- Maintenance of sheeting
- Weekly cleaning of all warehouses where operations have taken place, with a floor cleaner that has minimum power of 4kW and works with rotating brushes and is equipped to provide simultaneous vacuum cleaning/dust recovery capability
- 230 V, 50 Hz AC power with adequate earthing protection
- Pumps to retain artificial pressure in materials lock

Item 4: Drying of POPs wastes

The Bulk density specific weight of the POPs wastes to be removed off-site should not exceed 1.15 kg/dm³. Bulk density specific weight is excluding the existing and future packaging materials⁷. In practise, POP wastes that are saturated with water will weigh above the mentioned bulk density and should be dried on-site. The exact quantities of wastes saturated with water vary depending on weather conditions and the effectiveness of the site roofs.

Those POPs wastes that have a specific weight above the previously mentioned bulk density should be dried prior to repackaging and transport off-site for final destruction. Contractor should install a station for the (assisted) drying of saturated POPs wastes. The drying station should comply with the following conditions:

- Area where drying takes place should be at a pressure of 4-10 Pascal below that of the surroundings
- Air extracted from the assisted drying station should be filtered, as a minimum, over activated carbon filters with sufficient capacity for the extracted air quantities
- If necessary to achieve POPs wastes weight goals, air extracted from the drying area should be dehumidified

POPs wastes that are saturated with water should be transferred to the waste drying station, dried and further managed as dry POPs wastes after sufficient drying. Contracting Party's Representative will indicate what wastes require (assisted) drying.

The following works and materials are included in this item:

- Installation POPs wastes drying station
- Installation of measures needed to keep area for drying at pressure below surrounding areas
- Installation of extracted air purification system
- Installation of air dehumidification system

The following services should be provided during the works:

- Transfer of an estimated 318.39 tons of saturated POPs wastes to drying station
- Transfer of the dried POPs from the drying station wastes to area for repacking (included in item 5)
- Weighing and labelling of all repacked materials (included in item 5)
- Loading, shoring and securing containerized POPs waste as required for off-site transport in accordance with the ADR as applicable (included in item 5)
- Operation of extraction pumps to maintain low pressure for drying station for the duration of the drying

⁷ Excluded from the requirement of the bulk density specific of maximal 1.15 kg/dm³ are building materials that have a POP-concentration equal to or above the POPs wastes lower threshold limit of 5,000 mg/kg dry matter (d.m.)

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- Operation of air purification and air dehumidification systems
 - Cleaning, changing and disposal of filters for purification of air from drying station
 - 230 V, 50 Hz AC power with adequate earthing protection
 - Collection and off-site disposal of water from drying station or air extraction system

Item 5: Repacking, loading and removal of POPs wastes from Warehouse 4, 5 and 6

POP-pesticides present in Warehouse 4 to 6 are collected and transferred to a filling station.

POPs wastes are repacked into UN approved packaging materials suitable for off-site transport in accordance with the ADR as selected by the contractor.

The following works and materials are included in this item:

- UN approved packaging material for repacking of POPs wastes
- Pallets for storage of repacked wastes inside warehouses
- Installation/upgrading of a suitable filling station
- Maintenance of infrastructure provided including but not limited to fencing, site access points, associated security, on-site loading and lay down facilities, and in-door facilities utilized.

The following services should be provided during the repackaging works:

- Repacking of dried POPs wastes from drying station into UN approved packaging materials
- Repacking of an estimated 1,681.18 tons⁸ of POPs wastes from warehouse 4-6 into UN approved packaging materials
- Weighing and labelling of all repacked materials
- Loading, shoring, securing of materials as required for off-site transport in accordance with the national regulatory requirements ADR as applicable
- Having all national and as applicable international regulatory documentation in place as required for the initiation of off-site transportation activities including as applicable export transit and import permission documentation in accordance with Basel Convention procedures (undertaken in coordination with site authorities and national authorities)
- Documentation attesting to the licensing, permitting, required equipment and operator licensing/training applicable to all vehicles released for removal of loads removed
- Preparation and obtaining approvals/signatures as required of manifest or bill of lading documentation containing the itemized inventories of shipped truck loads by container/packaging unit as signified by a unique labelling identification system suitable for tracking by packaging unit through to final disposal

⁸ Accuracy of quantities is +/- 10 %

- Documentation signed by the Contracting Party or authorized representative and contractor's authorized representative signifying transfer of ownership and custody of the POPs waste to the contractor

Item 6: Cleaning of floors and walls in Warehouse 1-6

After the removal of the POPs, waste stockpiles the warehouses are cleaned to prepare for the removal of the contaminated floors and walls. Warehouses 1-3 have already been cleaned prior to the start of the current contract. Walls in warehouses 1-3 are to be cleaned with brush equipped vacuum cleaners. The warehouse floors of warehouse 1-3 are cleaned with large capacity scrubber - dryer. Corners, ridges and corrugations are cleaned with a high power vacuum cleaner. Collected materials are transferred into UN approved packaging material suitable for off-site transport according to the ADR as defined in Item 5 above.

Warehouse 4-6 have not yet been cleaned thoroughly. Floors of warehouses 4-6 are cleaned with scrubber -dryer, the walls are first blasted with dry ice provided that the integrity of building blocks is kept in-tact.

Only walls that are visually affected by the POPs wastes are cleaned with dry ice blasting. All other walls are to be cleaned with brush equipped vacuum cleaners. After dry ice, blasting and vacuum cleaning the dusts are left to settle overnight and the warehouse floors are once again cleaned with large capacity scrubber - dryer. Corners, ridges and corrugations are once more cleaned with a high power vacuum cleaner. Collected materials are transferred into UN approved packaging material suitable for off-site transport according to the ADR.

The machinery and equipment already present in the warehouses is cleaned manually with vacuum cleaner and wet cloths.

The following works and materials are included in this item:

- UN approved packaging material for repacking of POPs wastes
- Pallets for storage of repacked wastes inside warehouses
- High capacity scrubber - dryer
- High capacity vacuum cleaner
- Dry-ice blasting equipment including necessary dry ice
- Sweeping of all floors of warehouses 1, 2 and 3 with large capacity scrubber - dryer with minimum tank capacity of 90L, contact pressure of 24 grams and brush rotation speed of 180 rpm. Total floor area to be swept is 1,165 m²
- Cleaning of all corners, ridges and corrugations of warehouses 1, 2 and 3 with high powered vacuum cleaner. Minimum suction 60 l/s, vacuum 200 mbar. Total area to be cleaned is 250 m²

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- Cleaning of walls rafters and inside of the roofs of warehouses 1, 2 and 3 with high powered vacuum cleaner. Minimum airflow 60 l/s, vacuum 200 mbar. Total area to be cleaned is 3,000 m²
 - Cleaning of all walls, rafters and inside of the roofs of warehouses 4, 5 and 6 with dry-ice blasting with a minimum air pressure of 2 bar / 20 MPa and minimum airflow of 0.5 m³ / minute. Total area to be cleaned is 500 m²
 - Sweeping of all floors of warehouses 4 - 6 with large capacity scrubber - dryer with minimum tank capacity of 90L, contact pressure of 24 grams and brush rotation speed of 180 rpm. Total floor area to be swept is 1,800 m²
 - Cleaning of all corners, ridges and corrugations of warehouses 4 - 6 with high powered vacuum cleaner. Minimum airflow 60 l/s, vacuum 200 mbar. Total area to be cleaned is 200 m²
 - Cleaning of walls rafters and inside of the roofs of warehouses 4 - 6 with high powered vacuum cleaner. Minimum airflow 60 l/s, vacuum 200 mbar. Total area to be cleaned is 3,000 m²
 - Second sweeping of all floors of warehouses 4 - 6 with large capacity scrubber - dryer with minimum tank capacity of 90L, contact pressure of 24 grams and brush rotation speed of 180 rpm. Total floor area to be swept is 1,800 m²
 - Second cleaning of all corners, ridges and corrugations of warehouses 4 - 6 with high powered vacuum cleaner. Minimum airflow 60 l/s, vacuum 200 mbar. Total area to be cleaned is 200 m²
 - Manual cleaning of all equipment present inside the warehouses
 - Cleaning and removal of vacuum cleaner, scrubber - dryer and dry ice blasting equipment
 - Repacking of an estimated 8.76 tons of POPs wastes into UN approved packaging materials
 - Repacking of all PPE and other wastes generated during the works into UN approved packaging materials
 - Weighing and labelling of all repacked materials
 - Loading and shoring of materials as required for off-site transport
 - Collection and off-site disposal of water from site cleaning and washing area
 - Sampling and analysis of waste water according to the requirements set forth in Turkish legislation O.J. 26.11.2005-26005 and the facility accepting the waste water

5.2 General requirements for handling, loading and off-site removal of POPs wastes and POPs impacted wastes

Contractor will collect, consolidate, repack, and load POPs waste and POPs impacted wastes required for off-site transport to treatment, destruction and disposal facilities as applicable.

General requirements for handling and loading of POPs wastes and POPs impacted wastes are given in the next Sections, Environmental requirements are given in Section 5.3 and Appendix 1 and Health and Safety requirements are provided in Chapter 6 and HASP guidelines are given in Appendix 2.

5.2.1 Housekeeping and cleaning

Working areas are kept clean and organized at all times. The following Sections contain preconditions for the cleaning procedures in order to confine POP waste to the site, preventing exposure of staff, visitors and third parties working with materials and equipment used at the site.

Equipment

All equipment that has been used in Zone 3 has to be cleaned as described in Section 6.4 with wet cleaning inside zone 2 prior to transfer to zone 1 or use in zone 2. All equipment that has been used in the indoor areas of the site should be cleaned with dry brushing or vacuum cleaning prior to departure of site. All equipment that has been used in the indoor areas of the site is subject to inspection and approval of cleanliness by the Contracting Party's representative prior to leaving the site.

Staff

Contractor must enforce a decontamination protocol for all staff and visitors entering the site, which complies with international best practise and Turkish regulations. The decontamination protocol for all staff and visitors to the site should be included in the Contractor's final HASP. The Health and Safety Guidelines provide a general framework for staff decontamination.

Materials

Materials that have been used or stored in zone 3 and that cannot be adequately cleaned have to be tested for their POP-concentrations or are assumed to be POP impacted wastes.

Materials that have been used or stored in zone 2 and that have evidence for exposure to POP wastes should be adequately cleaned or are assumed to be POP impacted wastes.

5.2.2 Working area

- Working areas are clearly demarcated according to zoning as prescribed in Section 6.2
- For all working areas a clearly visible sign stating entry conditions and necessary PPE in Turkish language and with international symbols is installed
- A communication system is in place to allow for warning/notification of staff working in other zones without entry to the zone

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5.2.3 Permitted specific weight

Bulk density specific weight of the POPs wastes to be removed off-site should not exceed 1.15 kg/dm³. Bulk density specific weight is excluding the existing and future packaging materials.

It is not allowed to mix dry and wet POPs wastes to reduce the bulk density specific weight of the wet POPs wastes. Wet POPs wastes that have a higher bulk density specific weight should be dried on-site to meet the required bulk density specific weight.

Excluded from the requirement of the bulk density specific of maximal 1.15 kg/dm³ are building materials that have a POP-concentration equal to or above the POPs wastes lower threshold limit of 5,000 mg/kg dry matter (d.m.).

5.2.4 Weighting of waste materials

Weighting of waste materials should be done on-site with a calibrated scale that has a minimum accuracy of 1.0 kg and a minimum precision of ± 1 %. Calibration papers should be provided to the Contracting Party's Representative prior to the start of using the scale.

Weighing of the waste materials should be done in the final packaging prior to transfer of the materials into the vehicle for off-site transport and weights correlated with unique labelling system applied to each such container in inventory, shipping and tracking documentation following the waste after leaving the site.

5.2.5 Material separation

Mixing of POPs waste with other materials is prohibited.

POP impacted wastes should be collected, handled and repacked for off-site disposal, treatment, and/or destruction separately according to:

- Physical appearance
- Expected and/or proven POPs concentrations

Mixing of POPs impacted wastes with other materials should be kept to a minimum and avoided if possible. In the EWP, the Contractor should describe how the mixing of POPs impacted materials with other materials is avoided.

5.2.6 Permitted packaging material and labelling

POPs wastes and POPs impacted wastes should be repacked in UN certified packaging materials that are in compliance the relevant international agreements for the transport of dangerous goods. For transport via road ADR codes, for maritime transport IMDG codes and for rail transport RID-codes apply.

Contractor should indicate in the Execution Work Plan (EWP) what the proposed packaging is and confirm its application throughout the works, noting that the net cost and weight of packaging selected will impact the overall unit cost per ton of management of POPs waste and POPs impacted waste thereby being a significant factor in the selection of the successful contractor.

The use of second hand packaging material and pallets as applicable is permitted but is subject to inspection and approval by the Contracting Party's Representative.

The Contractor will label all primary containers in accordance with ADR requirements⁹, IMDG and RID-codes and should additionally include the following information:

- Basel and national waste identification code
- Weight of primary container
- Unique number of primary container based on a system established in the Work Plan and agreed with UNDP and owner and which will serve as a basic off-site tracking reference correlated to shipping documentation (manifest/waybill) through to its final point of disposition, including as applicable requirements of national regulations and the Basel Convention

Contractor will label all shipping containers in accordance with ADR, RID and IMDG Codes with additional the following information:

- Basel and national waste identification code
- Numbers of primary containers inside shipping container
- Unique number of shipping container based on a system established in the Work Plan and agreed with UNDP and owner
- Tracking form (manifest/waybill) number

5.2.7 Loading

Loading of all waste materials should take place within the confines of the site. The Contractor shall be responsible for the supervision, implementation, and coordination of loading operations ensuring that the materials are loaded and secured on suitable, licensed road transport consistent with the following requirements:

- The vehicle, its driver and staff involved in the packing and loading of the vehicle shall comply with the regulatory provisions and have the appropriate legal certificates according to Turkish regulatory provisions, particularly where the materials involved are hazardous waste (POPs waste and POPs impacted waste)
- The vehicle, its driver and staff involved in the packing and loading of the vehicle are subject to examination and inspection by Contracting Party's Representative for compliance with regulatory provisions

⁹ ADR Chapter 5.2 - Marking and Labelling

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- In the case of POPs waste and POPs impacted wastes, the above should specifically include responsibility for ensuring compliance with national and international requirements as applicable related to vehicle licencing and emergency response, communication, placarding equipment provisions, and in the care the driver licencing and training provision
- Packaged POP wastes should be fixed with adequate dunnage consisting of wooden structures and/or straps in cargo transport units before transport the cargo should be secured in accordance with standard EN 12195-1:2010 as a minimum. If further transport via rail or sea takes place the provisions of the RID and/or IMDG for stowage should be taken into account
- The loading area shall have a solid foundation to ensure stability of the hoisting equipment, stored materials and vehicles

5.2.8 On-site storage and staging

(Interim) Storage of POP wastes and POP impacted wastes are all operations where the materials are securely stored at the site in their modes of off-site transport.

Staging of POPs wastes and POPs impacted wastes is the collection of materials, packed in their modes of off-site transport, at a location prior to the regrouping of the materials for further transport.

For interim storage and staging on-site, the following provisions apply:

- Interim storage and staging should take place within the confines of the site
- Outdoor storage of POPs wastes and POPs impacted wastes is prohibited
- Interim storage and staging of POPs waste can only take place in packaged form within final sealed mode of off-site transport (for instance shipping container) according to ADR and UN standards
- Packaging of stored materials cannot come into contact with the site soil, site floors or site walls
- No storage of packaged POPs wastes can take place in indoor areas that classify as zone 3 according to Section 6.3
- There is no time limit, other than those set in the contractual obligations and national regulations, for storage of POPs wastes in indoor areas that classify as zone 2 according to Section 6.3
- For storage in closable containers ready for shipping as single units (for instance 20 or 40ft shipping containers), present in the outdoor areas within the confines of the site, the time limit for storage is 6 weeks or such time as may be agreed with the contracting party and regulatory authorities

Staging of the POPs wastes and POPs impacted wastes on-site is subject to the following provisions:

- Staging in the outdoor areas of the site, outside of closable containers, can take place for a maximum of 4 hours provided that there is no potential for dispersion of the POPs due to weather related conditions

5.2.9 Traffic measures

Contractor shall indicate in the EWP in detail how Contractor intends to address risks related to traffic for the entry and exit of material, staff and equipment to the site. Contractor should discuss and agree on necessary traffic measures with the Organized Industrial Zone and site neighbours. Agreement should be documented in a Traffic Control Plan (TCP) included in the agreed EWP.

The following preconditions for traffic measures apply:

- The road surrounding the site cannot be used for parking, idling, staging or storing of equipment, materials and vehicles
- Parking, staging, idling and storage of equipment, materials or vehicles at neighbouring sites is subject to their written approval
- Contractor shall take appropriate measures to warn traffic of the entry and exit of materials, equipment, vehicles and staff to and from the site

5.2.10 Completion of the works

- All equipment used for the works must be removed after completion of the work and cleaned according to the requirements set forth in Section 6.5.
- Materials stored inside the warehouses will be left to the warehouse owners after finalization of the works. Exception to this are:
 - All materials brought to the warehouse by the Contractor that the Contracting Party's Representative requests the Contractor to remove from the premises
 - Rented or leased materials or equipment
- Materials used for the works and stored inside the warehouse should be cleaned according to the requirements set forth in Section 6.5
- Contractor can leave equipment materials used for the work at the site subject to approval of the site owner and cleaning requirements set forth in Section 6.5
- Utility connections used for the works should be removed or disconnected after completion of the work according to the Contracting Party's Representative requirements
- Waste generated during the work must be removed and processed according to their classification as to environmental impact (POPs impacted wastes or non-POP impacted wastes)
- The decontamination unit should be cleaned after completion of the works

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5.3 Environmental requirements for handling and loading of POPs wastes and POPs impacted wastes

The following sections give the environmental requirements for the handling and loading of POPs wastes and POPs impacted wastes. Appendix 1 provides the requirements as set forth in the EMP for the Merkim site works based on the Environmental and Social Impact Assessment (ESIA). The Contractor will, as part of his EWP, describe in detail measures to comply with the mentioned environmental requirements.

5.3.1 Air quality, dust and odour

- Generation of dust outside of the indoor areas should be prevented
- Generation of dust in the indoor areas should be kept to a minimum
- Where possible the generation of dust should be mitigated at its source
- Humidification of POPs wastes as a measure to limit dust formation is prohibited
- Indoor areas where the processing of POPs waste creates an area of high airborne particulate generation should be kept at a pressure below that of the surrounding areas with the following conditions:
 - The pressure difference between the area of airborne particulate generation and surroundings areas should be a minimum of 1 Pascal and optimally between 4-10 Pascal
 - If needed the area of airborne particulate generation should be compartmentalized with sheeting and scaffolding to increase the efficiency of the ventilation system
 - Equipment operating in areas of high dustiness should be equipped with over-pressurized cabins and P3-filter for dust and vapour protection and A2-filter for organic pollution. Excess pressure should be at least 100 Pascal
 - Entry and exit of staff and materials to the areas of high dustiness should be through an airlock consisting of three compartments, with the middle compartment at a pressure of 10 Pascal below the surrounding areas
 - Areas of high airborne particulate generation are monitored continuously for Particulate Matter (PM) with concentrations total PM in mg/m³¹⁰
 - Exceptions to this precondition are operations and processing in warehouses 4-6 provided that: Roofs and walls of the warehouses are completely closed, subject to inspection and approval by Contracting Party's Representative
- Maximum permissible total particulate concentrations in areas of high dustiness areas are 500 mg/m³
- Maximum permissible total particulate concentrations in outdoor areas are 0.5 mg/m³¹¹

¹⁰ Monitoring in accordance with TSE-TS 2361 standards

¹¹ 0.5 mg/m³ is the German workplace limit for working with α -HCH without respiratory protection. It is chosen as it is the most stringent limit for all products involved and present in the highest concentrations

- Between the indoor and outdoor areas of the site a clear separation should be made that prevents the outflow of particulate and limits odour nuisance for the surrounding sites by:
 - Staff entry and exit to the indoor parts of the site should be closed with double flexible strip curtains
 - Materials and goods entry and exit points to the indoor parts of the site should be through an airlock with the middle compartment at a pressure of minimum 1 Pascal below the surrounding areas
 - Vehicle entry and exit points to the indoor parts of the site should be through a compartmentalized lock with flexible strip curtains. The lock should be closed when not in use
- Between areas classified as zone 2 and zone 3 (see Section 6.2) a dust curtain should be present

5.3.2 Soil and groundwater

- Contamination of soil should be prevented
- Contamination of groundwater should be prevented
- Areas where liquids are used are kept hydrologically separate from their surroundings
- Water used at the site is collected separately for testing and treatment off-site and not discharged to communal sanitary or storm water sewerage systems unless they meet local requirements
- The use of groundwater from the extraction wells as process water on-site is subject to approval of the extraction well owners
- The use of groundwater from the extraction wells as water in the decontamination unit is subject to approval of the extraction well owners. Turkish regulatory requirements and monthly testing for the following substances shall apply:
 - Total Petroleum Hydrocarbons (C5-C40)
 - Benzene, Toluene, Ethylbenzene, Xylene
 - Monochlorobenzenes
 - DDT and its metabolites, HCH

6 Health and Safety Requirements

6.1 General

The Contractor is required to comply with all relevant Turkish national occupational Health and Safety regulations including but not limited to:

- By-law on 'Occupational Health and Safety In Construction Works', Article 8(4) (05.10.2013-28786)
- By-law on Special Procedures and Principles In case of Works Carried Out by Workers that are worked in job rotation (O.J.07.04.2004-25426)
- By-law on Health and Safety Precautions Regarding Asbestos Usage, (O.J.25.01.2013-28539)

In addition, Contractor is expected to comply with applicable international best practises. The Contractor shall hold all necessary relevant health and safety permits required for the execution of the works, the identification and acquisition of these are the contractor's responsibility. During the implementation of the work, special attention shall be given to labour safety support measures in view of the potential health hazards associated with the substances to be handled. All staff working on the site shall be trained by the Contractor with the support of Contracting Party as required in the health and safety aspects related to handling and processing of POPs wastes, the successful completion of such training being demonstrated and documented.

As part of their proposal, proposers shall indicate its overall plans and policies in relation to labour safety. Contractor should indicate in the EWP and its HSAP in detail how it intends to demarcate the site into contaminated and clean working areas, and which rules the Contractor intends to implement to confine contaminants (hazardous waste, contaminated material, contaminated dust and liquid, et cetera) to the area, which is already contaminated.

As part of the EWP-documentation, the Contractor shall prepare and obtain the Contracting Party's agreement on a HASP including Risk Assessment register for which the guidelines are present as Appendix 2 of this TOR.

6.2 Required Zoning

In this Section, a zoning configuration is suggested which the Contractor should consider as a general reference framework. The Contractor is free to propose an alternative zoning with subsequent PPE and zone movement protocols subject to approval of the Contracting Party.

In case the Contractor proposes an alternative zoning, the Contractor should specify in the EWP, which zones apply to zones referenced in these technical specifications. The following three zones are identified:

- Zone 1: Clean zone
- Zone 2: Intermediate zone
- Zone 3: Contaminated zone

Zone 1: Clean zone

This applies to those parts of the site where there is no risk of contact with or exposure to POPs wastes, POPs impacted wastes, asbestos or other contaminated materials. The zone is used for entry and placement of vehicles for off-site transport of the repacked materials. POPs wastes and POPs impacted wastes in this area are present in their packaged form in their final closed mode for off-site transport (inside closed containers or closed canvas trucks). These Zone 1 parts are demarcated with tape.

Zone 2: Intermediate zone

An area of the site, which has been cleaned of POPs wastes, POPs impacted wastes and POPs impacted particulate prior to the start of the works to a level where visually no POP waste residues are present. In the intermediate zone, risk of contact with contaminated materials is limited; however low concentrations of POP impacted particulate might still be present. The zone is used for storage of repacked POP wastes, POP impacted wastes, and clean materials. Outdoor areas are demarcated with tape, where contaminated topsoil is present geotextile is used to separate clean materials from underlying soil. All indoor zones, where activities or storage takes place are, prior to full removal of contaminated concrete floors, weekly cleaned with ride on floor cleaner or equivalent to limit dust.

Zone 3: Contaminated zone

The contaminated zone is all those parts of the warehouse where POP wastes, POP impacted waste and POP impacted particulate are still freely present. Risk of contact with POP contamination in this zone is high and stringent safety precautions are necessary.

PPE requirements

Table 6.1 provides the general framework for minimum PPE-requirements for the three distinct zones mentioned previously.

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Table 6.1 Overview of PPE-requirements

PPE	Zone 1	Zone 2	Zone 3
Body	Cotton coveralls - visual amplification	Coverall Type 4-5 (Dry conditions) Coverall type 3 (When working with liquids or wet POPs)	Coverall Type 4-5 (Dry conditions) Coverall type 3 (When working with liquids or wet POPs) Disposable underwear on daily basis
Hands	When working with equipment or machinery nitrile or Leather gloves	Nitrile gloves + work gloves Chemical resistant gloves when working with liquids	Nitrile gloves + work gloves Chemical resistant gloves when working with liquids
Lungs	Dust mask	Half face mask A1B1E1K1 P3-filters	Full face mask with powered air purifying respirator A1B1E1K1 P3-filters*
Feet	Safety shoes	Safety boots	Safety boots
Head	Safety helmet	Safety helmet	Safety helmet
Ears	Only protection needed in case of noisy machinery	Only protection needed in case of noisy machinery	Only protection needed in case of noisy machinery
Eyes	Safety glasses	Closed glasses (dry) Splash guard (wet)	Full face mask

*** In areas with high airborne particulate formation (> 50 mg/m³) due to works, staff is required to work with independent air-supply**

The following figure (Figure 6.1) schematically represents the zoning configuration for the works. In this example, the installation for the repacking of the POPs wastes is left inside warehouse 3. Final zoning configuration as well as the location of filling equipment and drying stations is up to the Contractor.



Figure 6.1 Zoning during main repackaging of the POP wastes (North is to the left of the picture).

Warehouse 6 (excluded from picture is classified as Zone 3)

6.3 Transportation between zones

Table 6.2 and 6.3 show the movement within the site of staff, equipment and materials. Cleaning procedures are given in Section 6.4.

Table 6.2 Staff movement between zones

From	Zone 1	Zone 2	Zone 3
Zone 1	Allowed	Additional PPE-required - movement via decontamination unit	Additional PPE-required - movement via decontamination unit
Zone 2	Not allowed - decontamination needed - movement via decontamination unit	Allowed	Additional PPE-required - movement via decontamination unit
Zone 3	Not allowed - decontamination needed - movement via decontamination unit	Not allowed - decontamination needed - movement via decontamination unit	Allowed

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Table 6.3 Equipment and materials movement between zones

From	Zone 1	Zone 2	Zone 3
Zone 1	Allowed	Allowed	No direct movement between zone 1 and zone 3 possible
Zone 2	Dust removal by brushing*	Dust removal by brushing**	Allowed
Zone 3	No direct movement between zone 3 and zone 1 possible	Dust removal by brushing. Equipment and material previously used in zone 3 cannot be used in zone 2 without wet cleaning	Allowed

* This procedure does not apply to materials and equipment used for the loading of trucks

** This procedure only applies to materials that transfer between the indoor and outdoor areas of zone 2

All staff working inside the warehouses should be provided with sufficient breaks and pause providing liquids, such durations shall be specified by the Contractor in the approved HASP. In case temperatures rise above 25 degrees Celsius staff should be given the opportunity to use cooler packs.

6.4 Cleaning of materials

All materials and equipment that have been present in zone 2 or 3 (see Section 6.2) of the site are considered contaminated. Materials that have been used in zone 2 or 3 should be treated as POP impacted wastes after finalization of their use. Equipment used in zone 2 or 3 of the site should be cleaned according to the preconditions set forward in Table 6.3 prior to leaving the site.

6.5 Health and Safety Monitoring

As part of the health and safety requirements as a minimum the following items should be monitored by the Contractor:

- Medical status of all workers in zone 2 and 3 of the site prior to and directly after completion of the works with due consideration of the risk factors associated with these particular works
- Particulate matter according to TS2361 continues automatic testing in all areas that classify as areas of high airborne particulate (zone 3)
- Carbon Monoxide monitoring in all indoor areas where combustion engines are used

7 Deliverables and reporting

7.1 General requirements

Submissions of documents by the Contractor to the Contracting Party's representative shall comply with the following preconditions:

- Intermediate communications can be made in digital or analogue format
- Intermediate submissions to the Contracting Party's representative shall be 2 hardcopies and by full electronic copy, including all annexes, maps, technical calculations, certificates, et cetera. Submissions should be in English and Turkish language
- Loading manifests / loading bills shall be drafted in a minimum of fivefold (depending on number of regulatory and potentially Basel tracking notifications required). One hardcopy signed by both the Contractor's and Contracting Party's representative is delivered to each of the Contracting Party and site Owner
- Final submissions to the Contracting Party's representative shall be 10 hardcopies and by full electronic copy (CD, DVD or USB-stick) and include all annexes, maps, technical calculations, certificates, et cetera. Final submissions should be in English and Turkish language

7.2 Required documentation prior to the start of the works

Prior to the start of the works Contractor should prepare the documentation as presented in Table 7.1. The plans can be drafted as stand-alone plans or be attached to the EWP.

Table 7.1 Plans to be made by the Contractor and to be agreed with the Contracting Party

Plan	Part of tender documents	To be submitted after contract but before mobilization
Execution Work Plan (EWP)	General overview	Approved Final
Health & Safety Plan (HASP)	General overview	Approved Final
Traffic control plan (TCP)	-	Approved Final Appendix of EWP
Emergency Response Plan (ERP)	-	Approved Final Appendix of EWP
Contractor Environmental Management Plan (CEMP)	-	Approved Final Appendix of EWP

Documentation should be prepared and submitted to the UNDP and site owner in advance of initiating any on-site operations and within 30 days of contract signature.

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Execution Work Plan (EWP)

The Execution Work Plan should provide details of the work to be undertaken by the Contractor.

The EWP should include the following information:

- General Methods
- Operational procedures covering all work activities including but not limited to:
 - Packaging, labelling, handling, loading and off site removal of the POPs wastes and POPs impacted wastes
 - Cleaning of the site floors, walls and equipment
 - Operational procedures for drying of POPs wastes
 - Prevention of mixing of wastes during the operations
 - Prevention of particulate matter escaping the indoor areas during operations
- Communication including protocols for dealing with third parties
- Quality Control and Quality Assurance methods
- Project Planning
- List of all required permits for the execution of the works
- List of equipment and machinery to be used

In his commercial proposal bidder should include a general description of the intended operational procedures including a map of the site with the locations of main operations, equipment and particulate matter limitation measures.

Health and Safety Plan (HASP)

Contractor shall submit for approval an action plan for labour safety during implementation of the works that includes as a minimum the specific provisions for Health and Safety as given in Chapter 6. The following bullet points provide a general overview of the necessary contents of the Contractors HASP:

- General information on the site including:
 - Site location
 - Contamination status
 - Involved parties
 - Project implementation period
- Work description:
 - Overview of activities
 - Work arrangements including responsibilities of staff members
- Risk assessment of the activities:
 - Risks from surrounding land-use
 - Risks from site activities

- Overview Health and Safety Requirements and protocols:
 - General requirements including medical examinations
 - Operational requirements
 - Zoning
 - Administrative requirements
- Site safety and security:
 - General preventive measures
 - Near Misses, Incidents and Emergency Response
 - H&S Performance Reporting
 - Inspections
 - Auditing
 - Review, inspection and audit findings

During implementation of the work, special attention shall be given to labor safety support measures, in view of the health hazards associated with the substances to be handled.

An HASP guideline drafted during the design phase of the project is included in this documentation as Appendix 2.

As part of their commercial proposals, bidders shall indicate its overall plans and policies in relation to labour safety.

Traffic Control Plan (TCP)

As a stand-alone document or as an appendix to the EWP Contractor shall draft a TCP. The TCP shall contain the following information:

- General information on the site including:
 - Site location
 - Main traffic routes to and from the site
 - Traffic intensity on roads surrounding the site
- Work description:
 - Main entry and exit points for machinery and vehicles
 - Staff entry and exit points
 - Expected traffic intensity
- Risk assessment of traffic surrounding the site:
 - Suggested measures for dealing with traffic related risks include type and location of traffic signs, warning lights and/or traffic support staff
 - Minutes of meetings with site neighbours and Organized Industrial Zone on traffic, parking and idling
 - Written agreements with neighbours on the use of their sites for parking and/or idling

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Emergency Response Plan (ERP)

Contractor is responsible to have in place adequate emergency response procedures at the site.

As a stand-alone document or as an appendix to the EWP Contractor shall draft an ERP. The ERP shall contain the following information:

- General information on the site including:
 - Location of emergency equipment
 - Location of emergency exits and routes
 - Emergency communication systems
- Evacuation procedures
- Medical emergency procedures
- Fire emergency procedures
- Procedures for spills and accidents
- Emergency response organisation
- Overview of public emergency services and Contractors

Contractor Environmental Management Plan (CEMP)

Contractor shall submit for approval a CEMP that includes as a minimum the specific provisions for environmental management as given in Section 5.3 and Appendix 1. The following bullet points provide a general overview of the necessary contents of the CEMP:

- General background:
 - Site location
 - Contamination status
 - Site Clean-up and restoration activities
 - Project implementation period
- Organisation and staffing:
 - Statutory Understanding and Compliance
 - Availability of documents
 - Identification of responsibilities
- Environmental Management:
 - Mitigation measures
 - Monitoring measures
- Reporting procedures and communications:
- Environmental reports
 - Notification of Accidents
 - Communications
 - Internal Audits
 - Communication with external parties

As part of their commercial proposals, bidders shall indicate its overall plans and policies in relation to environmental management.

7.3 Required documentation during the execution of the works

Overviews of documentation that the Contractor needs to report, other than those legally required are listed in Table 7.2.

Table 7.2 Documents/reports to be made by the Contractor

Document / report	Frequency
Risk register	Weekly in case of changes
Incident and near miss reporting	In case of incidents or near misses (daily) occur
H&S Performance reporting	Weekly
Logbook	Daily
Progress reports	Weekly
Finalization report	Once within 30 days after finalization of the works

Risk register

Contractor shall, on a weekly basis, update the risk register for the HASP, TCP and CEMP. Updated risk register in tabular form is submitted digitally to Contracting Party's Representative.

Incident and near miss reporting

Contractor shall, within 24 hrs of any incident, spill or near miss, send a signed report to Contracting Party's Representative including the following information:

- Date and time of incident
- Location of incident
- Details of persons involved
- Cause of incident
- Witnesses
- Reporting to authorities and any outside parties
- Suggestions and measures preventing reoccurrence

Causes of the incidents should be addressed in the weekly risk register.

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H&S Performance reporting

Contractor shall, on a weekly basis share with the Contracting Party's Representative the H&S performances of the previous week. In the H&S performance report, Contractor shall include as a minimum the following information:

- Used PPE quantities and types
- Site measurements results (air quality, soil quality, groundwater quality, noise levels)
- Overview of accidents, incidents and near misses

Logbook

The Contractor has to record all activities in a logbook each working day, including registering the presence of the on-site staff and visitors, their zoning clearance, the performed operations, the performed control activities, et cetera.

Weekly progress report

Contractor shall, on a weekly basis share with the Contracting Party's the work progress of the previous week. In the weekly progress report, Contractor shall include as a minimum the following information:

- Executed activities during the week - subdivided according to the items stated in this ToR
- Planning of activities - in relation to original planning
- Deviations from the original work plan including causes and explanations

Finalization report

Contractor shall once within 30 days of finalization of the works, share with the Contracting Party's a finalization report. In the finalization report, Contractor shall include as a minimum the following information:

- Introduction containing:
 - Name and address client
 - Motivation and purpose of the works
 - Location of site
- Background information containing:
 - Summary of the EWP
 - Reference to any authority approval for the works
 - Overview of all stakeholders including their contact details
 - General organizational aspects
- Chapter on the implementation of the works containing:
 - Work scope
 - Status of legal and regulatory requirements
 - Chronological overview of the works including references to original planning

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- Transport on and off site of materials
- Chapter on status of the site after finalization of the works including:
 - Location of any materials left behind
 - Location of cleaned areas of the site
 - Other field sampling results (soil, groundwater) as part of the EMP requirements
- Appendices:
 - Map with site status, location of equipment, materials and areas of the site that have been cleaned
 - Analytical results of soil and groundwater quality in original form

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8 Key staffing and required qualifications

8.1 Contractor staff

Based on the main POPs stockpile removal design the following staff is required as a minimum for the execution of the works:

1. Overall Project Manager
2. Packaging Supervisor (full-time) - National or international at Contractor discretion
3. National Supervisor (also appointed Health and Safety Coordinator)
4. Four national trained workers to work with hazardous waste
5. One administrative assistant/translator

Bidder shall include the CV's of positions 1-3 with the technical proposal. CV's of positions 4-5 shall be submitted for approval prior to the start of the works. The key qualifications for mentioned positions are provided below.

Overall Project Manager:

This position will be the Contractor's corporate level authority assigned to the project and provide overall direction and assume overall responsibility for its supervision and relevant high level decision making for the assignment. The qualifications required for this position are as follows:

- 10 years direct operational experience in the management of hazardous waste including pesticides and associated wastes
- 5 years senior supervisory experience in the management of hazardous waste including POPs wastes
- Undertaking the above responsibilities for at least one similar POPs waste elimination assignment during the past four years that generally involved the above scope, including demonstrated successful management of export, transit and import procedures under the Basel Convention
- University degree in a relevant technical discipline (i.e. chemical engineering, chemistry, environmental sciences) or equivalent industrial experience and relevant training
- Fluent in English, with Turkish being an asset

On-site Supervisor

This position will be for the Contractor's senior field staff. Position provides overall day to day supervision and coordination of activities on site. Staff member will have the authority of the Contractor's authorized representative for purposes of day to day interface and coordination with authorized representatives of UNDP, the Owner(s), and national and local regulatory authorities having jurisdiction.

Additionally, the position will be responsible for supervision of national Subcontractors, including any transportation and staging and/or interim storage operations. The qualifications required for this position are as follows:

- 10 years direct operational field experience in working with hazardous wastes
- 5 years direct operational field experience in working on contaminated sites
- 5 years senior supervisory experience in the management of hazardous waste including POPs wastes
- 5 year experience with health and safety implementation in supervisory role
- Bachelor degree in relevant technical discipline (i.e. chemical engineering, civil engineering) or equivalent industrial experience and relevant training
- Proven Health and Safety training for handling of hazardous wastes in the past 4 years with required local accreditation
- Fluent in English, with Turkish being an asset

National Supervisor

National Supervisor position is for the team manager of the operations. National Supervisor is subordinate to the On-site Supervisor and does not have authority for dealing with third parties. National Supervisor should be experienced with field operations of hazardous wastes handling and general construction works. The qualifications required for this position are as follows:

- 5 years direct operational field experience civil engineering projects
- 2 years direct operational field experience in working with hazardous wastes
- College degree in relevant technical discipline (i.e. chemical engineering, civil engineering) or equivalent industrial experience and relevant training
- Proven Health and Safety training in the past 2 years

8.2 Technical staff necessary for Turkish legislative requirements

Contractor is expected to arrange his/her technical staff according to Turkish legislative requirements related to access to and use of qualified/accredited expertise including among others in the area of; environmental management, occupational health and safety, medical supervision and dangerous goods management. The Turkish regulatory requirements the contractor has to take into account includes but is not limited to the following:

- The requirements for staff presence, qualification and accreditations set forth on By-law on dangerous goods by road (O.J. 24.10.2013-28801) and Communique on Dangerous Goods Security Consultancy (dated O.J.22.05.2014-29007)
- The requirements for staff presence, qualifications and accreditations in accordance with by-law on "Occupational Health and Safety In Construction Works (05.10.2013-28786)
- The requirements for staff presence, qualifications and accreditations set forth in the Law on Business Health and Safety No:6331

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- Environmental monitoring and management activities should be executed by a certified party in accordance with the requirements set forth in the Environmental Law and related regulation Contractor shall include in his/her technical proposal a section on how he/she intends to cover these obligations in a manner consistent with normal industrial practice in Turkey and how he/she intends to demonstrate that the responsible regulatory authorities are satisfied with the provision of the required expertise during implementation.

8.3 Required machinery

Based on the main POPs stockpiles clean-up design the following machinery is required for the execution of the preliminary works:

- One excavator with pressurized cabin
- One funnel with worm (auger) and conveyor belt (approximately 50 m, partially already present)
- Two fork lift trucks
- Two pallet trucks
- One cherry picker
- One ride-on floor scrubber-dryer
- One dry ice pressure cleaner
- One pressure washer (water)
- One high power industrial vacuum cleaner

All machinery, including type and power should be listed in the EWP of the Contractor.

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Appendix

1

Environmental Management Requirements

- Table A1.1 provides an overview of the environmental mitigation measures the Contractor has to implement for the works
- Table A1.2 provides an overview of the monitoring the Contractor has to execute prior to the start of the works
- Table A1.3 provides an overview of the monitoring the Contractor has to execute during the execution of the on-site works
- Table A1.4 provides an overview of the monitoring the Contractor has to execute after finalization of the works

Table A1.1 Site mitigation measures

Issue	Location	Mitigating Measures
General	All areas	<ul style="list-style-type: none"> • Contractor shall list and design Pollution Prevention measures as part of his Work Plan
Air Quality	Inside	<ul style="list-style-type: none"> • Areas where processing of POP-pesticides wastes causes high dust formation are kept at pressure below surrounding areas • All staff, equipment and machinery leaving interior parts of the warehouse where high dust formation is common are cleaned • Limiting speed of vehicles in areas covered by dust • Weekly cleaning of areas where no processing activities take place to remove POP-pesticides dusts
	Outside	<ul style="list-style-type: none"> • All staff, equipment and machinery leaving the interior parts of the warehouse are cleaned • No active airflow between in and outside parts of the site by using locks for staff movements and transport of equipment and machinery • Supply active dust suppression on transport areas that are not asphalted as conditions requires • The load in all trucks leaving the site should be covered to prevent particulate release
	Site surroundings	<ul style="list-style-type: none"> • Warehouse roof and walls are kept as a containment until all POP-pesticides wastes and POP-pesticides impacted wastes have been removed • All equipment and machinery leaving the site needs to be cleaned • Supply active dust suppression on transport areas that are not asphalted as conditions requires

Issue	Location	Mitigating Measures
		<ul style="list-style-type: none"> The load in all trucks leaving the site should be covered to prevent particulate release
Noise	In & outside	<ul style="list-style-type: none"> The noise emitted from the activity such as demolition may not exceed the limit values given in Table-5 in Annex-VII as for building Lday (dBA) 70, for road Lday (dBA) 75 of By-Law on assessment and management of environmental noise Limit noise generation on-site to 07 - 19h Limit noise generation during religious festivities and agree upon noise generation with local Mosque Acquire permit from Kocaeli Provincial Directorate of Environment and Urbanization for carrying out construction activities in evening and night time (between 07.00 and 19.00)
Odor	Outside	<ul style="list-style-type: none"> Warehouse roof and walls are kept as a containment until all POP-pesticides wastes and POP-pesticides impacted wastes have been removed Warehouse entrance and exit points are kept closed when not in use Areas where equipment, materials or staff cleaning takes place are kept covered when not in use
Soil and groundwater quality	Outside	<ul style="list-style-type: none"> Clean and contaminated materials cannot mix Areas where liquids are used are kept hydrologically separate from surroundings
Waste	In & outside	<ul style="list-style-type: none"> Waste generation is kept to a minimum Wastes of different hazard classifications cannot be mixed Liquid wastes are stored separately and transported off-site by tanker truck Contractor shall include waste management planning into his work (according to the By-Law on waste management¹²) Domestic wastewater is either send to the municipal sewerage network or collected and transported off-site to a waste water treatment plant The Contractor shall ensure that all relevant staff are trained in health and safety issue in relation to work with POP-pesticides and use of personal protection equipment The Contractor shall ensure that experienced site supervisors qualified for Health and Safety and / or Dangerous goods management are present during working times at the site The Contractor shall set up a health and safety organization before the implementation of the work
	Site surroundings	<ul style="list-style-type: none"> All materials leaving the site are cleaned from soil, dust or other materials Waste will only be transported off-site in their approved packaging materials, in secure shipping containment, and by companies licensed for the off-site transport of those specific waste types

¹² By-law on waste management (O.J. 02.04.2015-29314)

Issue	Location	Mitigating Measures
HSE	Inside & outside	<ul style="list-style-type: none"> During the execution of all works a supervisor will make sure that the HSE rules like zoning and use of PPE are respected by workers, project management staff and all visitors
	Site surroundings	<ul style="list-style-type: none"> During the execution of all works a supervisor will make sure that no unauthorized person are entering the site The public is warned by signs that the site is a site with hazardous waste and that entry is restricted The site fence is kept intact and outside working hours the site is closed with a lockable On the outside fence are signs with contact details in case danger

Table A1.2 Baseline monitoring

Item	Location	Parameter	Sampling points	Frequency	Analyses	Testing standards
Air Quality	Site surroundings	DDT, HCH,	<ul style="list-style-type: none"> • Mosque • Upwind 1 location maximum 100 m from site • Downwind 2 locations 100 and 200 m from site 	Once prior to the start of the works	DDT, HCH in mg/m ³	Adjusted strategy from ISO 16000-13:2008 or ISO 16000-32:2014 or own standard
	In & outside & site surroundings	Particulate Matter	<ul style="list-style-type: none"> • Mosque • Upwind 1 location maximum 100 m from site • Downwind 2 locations 100 and 200 m from site 	Once at the start of the works	PM in mg/m ³	(TS) EN 12341 according to By-law on Assessment and Management of Air Quality (O.J.06.06.2008-26898)
Noise	Site surroundings	Noise levels	<ul style="list-style-type: none"> • Mosque • Upwind 1 location • Downwind 2 locations 	Once prior to the start of the works	Noise levels (dB)	TS ISO 1996-2/TS ISO 1996-2/T1
Odor	Site surroundings	Odor	<ul style="list-style-type: none"> • Mosque • Trucker restaurant • Upwind 1 location maximum 100 m from site • Downwind 2 locations 100 and 200 m from site 	Once prior to the start of the works	Odor	(TS)EN 13725, TSE 13726 (by-law on By-law on Emissions Control Originated Odor (O.J. 19.07.2013-28712))

Item	Location	Parameter	Sampling points	Frequency	Analyses	Testing standards
Soil and groundwater quality	Outside	Soil quality	<ul style="list-style-type: none"> All outdoor areas to be classified as Zone 2 in project works 	Once prior to the start of the works	DDT, HCH in mg/kg	One composite sample per 100 m ² of exposed soil. Composite sample made from 5 manual borings till 30 cm minus ground level. Sampling according to By-Law on Soil Pollution Control and Areas Polluted by Point Sources (O.J. 08.06.2010-27605)
	Outside	Groundwater quality	<ul style="list-style-type: none"> All three exterior groundwater wells 	Once prior to the start of the works	DDT, HCH, Mono-chlorobenzenes in µg/l	Sampling according to By-Law on Soil Pollution Control and Areas Polluted by Point Sources (O.J. 08.06.2010-27605)
	Site surroundings	Soil quality	<ul style="list-style-type: none"> Uncovered areas within 50 m from site fence 	Once prior to the start of the works	DDT, HCH in mg/kg	One composite sample per 1,000 m ² of exposed soil. Composite sample made from 5 manual borings till 30 cm -ground level. Sampling according to by-law on Soil Pollution Control and Areas Polluted by Point Sources (O.J. 08.06.2010-27605)
HSE	Out & inside & site surroundings	Health status	<ul style="list-style-type: none"> All staff 	Once prior to the start of the works	Health check	To be determined by workplace physician

Table A1.3 Execution monitoring

Item	Location	Parameter	Sampling points	Frequency	Analyses	Testing standards
Air Quality	Inside	DDT, HCH	<ul style="list-style-type: none"> One in Zone 2 at 1.5 m above site floor 	Monthly	DDT, HCH in mg/m ³	Adjusted strategy from ISO 16000-13:2008 or ISO 16000-32:2014
		Particulate Matter	<ul style="list-style-type: none"> Next to all activities generating high levels of dust 	Continuously during working hours	Total PM in mg/m ³	TS 2361 Continuous automatic testing. Equipment sensitivity minimum 5 mg/m ³
		Air Pressure	<ul style="list-style-type: none"> In all areas kept at air pressure below outdoor pressure 	Daily	Air pressure reading	Equipment sensitivity minimum 1 Pascal
		Carbon Monoxide	<ul style="list-style-type: none"> In all areas where combustion engines are used 	Continuously during working hours	On-site testing for CO concentration in air	Continuous automatic measurement with BS EN 50545-1:2011+A1:2016 approved CO-meter (with alarm)
	Outside	DDT, HCH	<ul style="list-style-type: none"> Effluent of waste drying station filter 	Daily	Check of air extraction system and filter for effectiveness	Control based on equipment suppliers prescriptions
		DDT, HCH	<ul style="list-style-type: none"> One in Zone 2 at 1.5 m above site floor next to site entrance 	Quarterly	DDT, HCH in mg/m ³	Adjusted strategy from ISO 16000-13:2008 or ISO 16000-32:2014
	Site surroundings	DDT, HCH	<ul style="list-style-type: none"> One at Mosque One 50 m downwind of the site 	Quarterly	DDT, HCH in mg/m ³	Adjusted strategy from ISO 16000-13:2008 or ISO 16000-32:2014
Noise	Inside	Noise	<ul style="list-style-type: none"> In areas with excessive noise 	Only in case of excessive noise as indicated by contracting parties representative	Noise dB	TS 2607 ISO 1999, For Noise for interior parts (work hygiene)
	Outside	Noise	<ul style="list-style-type: none"> In areas with excessive Noise 	Only in case of excessive noise or complaints	Noise dB	TS ISO 1996-2/TS ISO 1996-2/T1
	Site surroundings	Noise	<ul style="list-style-type: none"> Mosque Restaurant 	Only in case of excessive	Noise in dB	TS ISO 1996-2/TS ISO 1996-2/T1 according to By-law on Assessment

Item	Location	Parameter	Sampling points	Frequency	Analyses	Testing standards
				noise or complaints		and Management of Environmental Noise (O.J. 04.06.2010- 27601 amended O.J. 18.11.2015-29536)
Odor	Site surroundings	Odor	<ul style="list-style-type: none"> • Mosque • Trucker restaurant • Upwind 1 location maximum 100 m from site • Downwind 2 locations 100 and 200 m from site 	Monthly during the works	Odor	Subjective testing by interviewing inhabitants or workers. Focus on odor coming from POP-pesticides only. In case of complaints (TS)EN 13725, TSE 13726 according to by-law on By-law on Emissions Control Originated Odor (O.J. 19.07.2013-28712)
Soil and groundwater quality	In & outside & surroundings	Not applicable				
Waste	In & outside & surroundings	Discharge characteristics	<ul style="list-style-type: none"> • All liquids 	Per bulk unit (IBC unit of tanker truck). Maximum 20 m ³	Heavy metals, DDT, HCH and all other requirements according to (O.J. 26.11.2005-26005)	NEN 5860 (in case effluent points are present, sampling can also be done in accordance with ASTM D 4057)
		Dry weight	<ul style="list-style-type: none"> • Wet POP-pesticides 	On-site testing per 2 tons wet and afterwards dried POP-pesticides	Dry weight (kg/m ³)	ASTM D2216 or Turkish standards
HSE	In & outside	Use of PPE	<ul style="list-style-type: none"> • All staff 	Continuously	Use of correct PPE	Monitoring by site supervisors
		Zoning	<ul style="list-style-type: none"> • All staff 	Continuously	Correct use of zoning	Monitoring by site supervisors

Table A1.4 Final monitoring

Item	Location	Parameter	Sampling points	Frequency	Analyses	Testing standards
Soil and groundwater quality	Outside	Soil quality	Verification of quality of all areas sampled in baseline	Once after finalization of the works	DDT, HCH in mg/kg	One composite sample per 100 m ² of exposed soil. Composite sample made from 5 manual borings till 30 cm minus ground level
		Groundwater quality	All three exterior groundwater wells	Once after finalization of the works	DDT, HCH, Monocloho-benzenes in µg/l	According to Turkish legislations
	Site surroundings	Soil quality	Verification of quality of all areas sampled in baseline	Once after finalization of the works	DDT, HCH in mg/kg	One composite sample per 1,000 m ² of exposed soil. Composite sample made from 5 manual borings till 30 cm minus ground level
HSE	In & outside	Health status	All staff	Once after finalization of the works	Health check	To be determined by workplace physician

Appendix

2

HASP guidelines