# Annex II A – Detailed Technical Specification

Supply of a specialised waste collection vehicle for semi-underground containers

FICHO (HR-BA-ME00671) | 0108-019/26-24939

## 1. Chassis

1.1 New, unused chassis manufactured in 2026 or later.

1.2 Short, tilting day cab.

1.3 Drive configuration of 4 × 2.

1.4 Wheelbase no greater than 4,300 mm.

1.5 Total chassis load rating of at least 18 t.

1.6 Mechanically suspended steering axle.

1.7 Air suspension on the drive axle and parabolic leaf springs on the steering axle.

1.8 Drive axle differential lock.

1.9 Steering axle load rating of at least 7.1 t.

1.10 Drive axle load rating of at least 12 t.

1.11 Anti-roll bars and shock absorbers on both the steering and drive axles.

1.12 In-line six-cylinder diesel engine with a displacement of 6.8 to 7.5 litres.

1.13 Maximum engine torque of at least 1,150 Nm.

1.14 Engine power of at least 290 metric horsepower (PS).

1.15 Engine emissions class Euro VI or higher.

1.16 Automatic transmission.

1.17 Transmission power take-off matched to the requirements of the refuse body.

1.18 Engine brake rated at least 170 kW, capable of automatic activation via the brake pedal.

1.19 Heated fuel filter.

1.20 Fuel pre-filter with water sensor.

1.21 Heated air dryer.

1.22 Six tyres and one spare. Front and rear tyre size at least 315/80 R22.5.

1.23 White cab.

1.24 Two passenger seats.

1.25 Audible reversing alarm.

1.26 Air conditioning with an engine-driven compressor.

1.27 Central cab locking.

1.28 Heated, electrically adjustable main and wide-angle exterior mirrors.

1.29 Factory tool kit, first-aid kit, warning triangle and hydraulic jack.

1.30 Tyre inflation hose at least 20 m long, with pressure gauge.

1.31 Disc brakes on all axles.

1.32 Anti-lock braking system, traction control and electronic stability control.

1.33 Parking brake that locks all wheels.

1.34 Fuel tank capacity of at least 200 litres, with a filler-neck strainer and a cap lockable with the cab key.

1.35 Lockable diesel exhaust fluid tank with a capacity of at least 35 litres.

1.36 Electric windows in the driver’s and passenger’s doors.

1.37 Tank cap secured by a retaining chain.

1.38 Remote control for central cab locking integrated into the key.

1.39 Heated, electrically adjustable kerb-view mirror on the right.

1.40 EU-type front-view mirror.

1.41 Cab seating configuration of one driver and two passengers.

1.42 Air-suspended driver’s seat.

1.43 Seat belts on all seats.

1.44 Digital tachograph.

1.45 On-board trip computer.

1.46 Front underrun protection.

1.47 Door-mounted lights illuminating the area used to enter and leave the cab.

1.48 Front and rear fog lights.

1.49 Mechanical battery isolation switch.

1.50 Factory-fitted radio with speakers.

1.51 Maintenance-free 12 V batteries rated at least 175 Ah.

1.52 Vehicle and driving data shown on the display.

1.53 Brake pad thickness indication with a pad wear warning.

1.54 Headlamp beam range adjustment.

1.55 Twin halogen headlamps.

1.56 Daytime running lights.

1.57 Digital instrument panel measuring at least 12.0 inches.

## 2. Refuse compactor body

2.1 Rear-loading refuse body with an ejector plate, suitable for above-ground waste bins and containers conforming to EN 840 Parts 1, 2 and 3, and for semi-underground and underground containers emptied by crane.

2.2 The maximum combined mass of the vehicle and its load must be within the chassis load rating.

2.3 Refuse body load compartment volume of at least 16 $m^3$.

2.4 Minimum compaction ratio of 1:6.

2.5 Tailgate incorporating the compaction mechanism.

2.6 Body mounted to the base vehicle on a universal subframe protected against corrosion by galvanising.

2.7 Hopper floor made of wear- and corrosion-resistant material, at least 6 mm thick, with a minimum hardness of 450 HB and a protective coating.

2.8 Fixed receiving hopper with a volume of at least 1.5 $m^3$.

2.9 Load compartment floor made of corrosion- and wear-resistant high-tensile steel sheet, at least 4 mm thick, with a protective coating.

2.10 Load compartment side walls made of corrosion- and wear-resistant high-tensile steel sheet, at least 4 mm thick, with a protective coating.

2.11 Smooth, curved, one-piece side panels.

2.12 Tailgate that locks automatically on closing and unlocks automatically on opening, operated by two double-acting hydraulic cylinders.

2.13 Tailgate opening angle of 85° to 90° from the vertical.

2.14 The tailgate lifting and lowering cylinders, mounted externally on its left and right sides, must have load-holding valves to prevent the tailgate falling if a hydraulic hose ruptures.

2.15 The compaction mechanism must consist of a robot-welded slide plate and a robot-welded curved packer plate. Each plate must be driven by two hydraulic cylinders inside the loading area. The packer plate cylinders must attach to the slide plate.

2.16 The slide plate must run on highly wear-resistant metal rollers and the packer plate on plastic guides.

2.17 The packer plate must rotate to sweep waste from the hopper. The slide plate must then move linearly to compact the waste against the ejector plate.

2.18 Maximum compaction cycle time of 25 seconds.

2.19 The operator must be able to adjust compaction manually from the cab control panel, over a range of 5% to 100%, by regulating pressure in the ejector plate hydraulic system for the collection of recyclable waste.

2.20 The ejector plate must move automatically along the full length of the load compartment on guides at its lower sides, driven by a double-acting telescopic hydraulic cylinder. The cylinder’s front eye must be mounted outside the compartment so the plate can retract to the end of the body.

2.21 The lower half of the ejector plate must curve rearwards from the vertical to improve discharge.

2.22 A profiled rubber seal between the hopper and the load compartment must prevent leachate from escaping.

2.23 A rear-mounted mechanism operated by two double-acting hydraulic cylinders must allow selection between emptying semi-underground or underground containers and emptying above-ground containers.

2.24 Electrohydraulic control of all body functions through control modules and a control panel.

2.25 The in-cab control panel must include a body operating-hours meter, safety stop, fault warnings, body status display and beacon activation control. It must allow monitoring of compaction, lighting, servicing and waste discharge.

2.26 All waste discharge functions must be controllable by buttons on the in-cab control panel to support driver visibility and safety.

2.27 The tailgate lowering control must be positioned at the rear side of the vehicle and require two-handed operation.

2.28 Control stations on both sides at the rear must have buttons to start and stop the automatic compaction cycle, operate individual compaction steps, signal, control work lights and stop the body safely.

2.29 Rear camera integrated with the in-cab control panel.

2.30 Automatic engine speed control for all body functions.

2.31 A dual-circuit hydraulic vane pump must supply the entire body hydraulic system. The front pump must power compaction, discharge and tailgate raising and lowering. The rear pump must power the bin and container lifter and the hydraulic crane.

2.32 Hydraulic oil tank behind the cab, fitted with a level switch and a return filter.

2.33 Box sections must protect the roof-mounted hydraulic lines from damage.

2.34 Electrical control of all body functions via a controller area network (CAN bus), with solenoid control valves and manually operated control panels.

2.35 Road lighting and signalling must comply with applicable road traffic safety legislation. An additional work light must be fitted at the upper right rear of the body and a rotating beacon at the left rear.

2.36 A roof-mounted hydraulic crane must empty semi-underground and underground containers. A rear lifter must empty above-ground bins and containers conforming to EN 840 Parts 1, 2 and 3.

2.37 Two rear riding steps, one on each side, for operators collecting above-ground containers. With the steps lowered, vehicle speed must be limited to 30 km/h and reversing must be inhibited.

2.38 Operator handrails on both sides at the rear.

2.39 Body-mounted side underrun guards and rear wheel mudguards with mudflaps.

2.40 A wastewater collection tank in the tailgate, with valves fitted with aluminium handles for discharge into a collector.

2.41 White protective finish with reflective strips. All components must be sandblasted, primed with protective paint and finished with two-component paint.

## 3. Hydraulic crane

3.1 Construction to classification HC1/HD4/B4.

3.2 Lifting moment of at least 70 kNm (7.14 tonne-metres).

3.3 Maximum outreach of 7.7 m.

3.4 Lifting capacities of at least 1,750 kg at 4 m, 1,360 kg at 5 m and 950 kg at 7 m outreach.

3.5 Slewing angle of at least 330°.

3.6 Slewing torque of at least 17 kNm (1.74 tonne-metres).

3.7 Two telescopic extensions.

3.8 Integral load-holding valve.

3.9 Remote crane control, with a wired control as an alternative.

3.10 Crane mass no greater than 1,100 kg.

3.11 Crane hook for lifting containers.

3.12 Maximum working pressure of 240 bar.

3.13 Maximum crane length with both telescopic extensions of 7,700 mm.

3.14 Maximum crane width of 670 mm.

3.15 Maximum crane base diameter of 750 mm.

3.16 Hydraulic motor for slewing.

3.17 Ball bearing in the slewing base.

3.18 Corrosion protection by cathodic electrodeposition coating.

3.19 Crane mounted on the roof of the refuse collection body.

## 4. Documents required with the tender

4.1 Authorisation or confirmation from the base vehicle (chassis) manufacturer or its authorised representative in Montenegro that the tenderer may offer its base vehicle (chassis) in this procurement procedure.

4.2 Authorisation or confirmation from the refuse body manufacturer or its authorised representative in Montenegro that the tenderer may offer its refuse body in this procurement procedure.

4.3 Authorisation or confirmation from the crane manufacturer or its authorised representative in Montenegro that the tenderer may offer its crane in this procurement procedure.

4.4 Authorisation or confirmation from the base vehicle (chassis) manufacturer or its authorised representative in Montenegro that the tenderer owns or has access to an authorised service facility for the base vehicle (chassis) in Montenegro. The document must state the service facility's address.

4.5 Authorisation or confirmation from the refuse body manufacturer or its authorised representative in Montenegro that the tenderer owns or has access to an authorised service facility for the refuse body in Montenegro. The document must state the service facility's address.

4.6 Authorisation or confirmation from the crane manufacturer or its authorised representative in Montenegro that the tenderer owns or has access to an authorised service facility for the crane in Montenegro. The document must state the service facility's address.

4.7 Technical catalogue or confirmation of the required technical characteristics of the base vehicle (chassis), signed by an authorised representative of the base vehicle (chassis) manufacturer and identifying the procurement reference and the model offered.

4.8 Technical catalogue or confirmation of the required technical characteristics of the refuse body, signed by an authorised representative of the refuse body manufacturer and identifying the procurement reference and the model offered.

4.9 Technical catalogue or confirmation of the required technical characteristics of the crane, signed by an authorised representative of the crane manufacturer and identifying the procurement reference and the model offered.

4.10 Technical drawing of the complete vehicle showing the axle load distribution.

## 5. Delivery and warranty

5.1 Maximum delivery period: 210 days.

5.2 Warranty: at least 24 months from handover of the complete vehicle.

5.3 Place of delivery: the Contracting Authority's site.