

KARARA MINING LIMITED

Karara Iron Ore Project

Specification for Conveyor Take-Up Equipment

L262M-ME-SPC-0001

20-JUN-25

KARARA MINING LIMITED
KARARA IRON ORE PROJECT
SPECIFICATION FOR CONVEYOR TAKE-UP EQUIPMENT (L262M)

Synopsis

This technical specification relates to the supply of Conveyor Take-up equipment for the Karara Iron Ore Project.

Disclaimer

“This document has been prepared by Karara Mining Limited for exclusive use on the Karara Iron Ore Project (“the Purpose”). Use of this document other than for the Purpose is not permitted.”

PROJECT L262M-ME-SPC-0001 - SPECIFICATION FOR CONVEYOR TAKE-UP EQUIPMENT					
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APPENDIX A REFERENCE DOCUMENTS

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1 INTRODUCTION

This Specification covers the general technical requirements for the supply of conveyor take-up equipment including wire ropes, sheaves and winches.

This Specification is intended to ensure the fitness for purpose of the conveyor take-up system.

Note: This Specification lists minimum requirements. Where the features of the standard design offered by the Supplier exceed the stated requirements, the Supplier shall bring it to the attention of the Engineer for approval.

This document shall be read in conjunction with the associated scope of work document and supporting reference information schedules.

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2 GLOSSARY

Wherever the words “Company, Purchaser or Buyer” are used, it shall mean Karara Mining Limited,

Wherever the words “Contractor, Supplier or Manufacturer” are used it shall mean the person so named in the Contract (and its successors and permitted assigns).

Wherever the words “Company’s Representative, Purchaser’s Representative or Buyer’s Representative” are used, it shall mean the person so named in the Contract (and its successors and permitted assigns).

Term	Definition
Authorities	Any statutory, public, municipal, governmental or administrative department, commission, authority, agency or entity with jurisdiction in connection with the WUC.
BoD	Basis of Design.
CCIWA	Chamber of Commerce and Industry Western Australia.
CDRL	Contractor Data and Document Requirements List.
Company’s Project Requirements	Has the meaning ascribed to it in the Contract
Company’s Representative’s nominee	Means an individual appointed in writing by the Company’s Representative under the Contract.
Contract	The agreement between the Company and the Contractor to which this Scope of Work pertains.
Equipment	Means the goods to be supplied by the Supplier.
Execution Date	Means the date on which the Formal Instrument of Agreement is signed by the Company.
HAZOP	Hazard and Operability Review.
HME	Heavy Mining Equipment.
HSEC	Health, Safety, Environment and Community.
IFC	Issued For Construction.
KIOP	Karara Iron Ore Project.
Mine site	The location of the KIOP mine at Karara in the Mid-West Region of Western Australia, approximately 215 km East of Geraldton and 320 km North-North East of Perth.
MIS	Management Information Systems.
MTOs	Material Take Offs.

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Term	Definition
PEP	Project Execution Plan.
PFDs	Process Flow Diagrams.
PMC	Project Management Contracting
SCADA	System Control And Data Acquisition.
SDRL	Supplier Data and Document Requirements List.
SoW	Scope of Work.
Supplementary Requirements	Specifications, standards, regulations and codes of practice set out at Section 4 of this SoW.
Take-Up System	Refers to the complete take-up system including wire rope, sheaves and winches.
Tenderer	Means a person who lodges a tender for the Work.
Work	Includes the supply of Equipment.
WUC	Means the whole of the Work to be carried out under the contract.

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3 COMPLEMENTARY REQUIREMENTS

The Supplier shall adhere to the following complementary requirements when undertaking Works under the Contract (WUC). Adherence to the following complementary requirements is notwithstanding the Supplier's satisfaction of all legislative requirements under the Contract.

The Equipment shall comply with all national, international and KML project specifications referenced elsewhere in this Specification.

All work covered by this Specification will comply with relevant legislation.

The Equipment shall be suitable for operation under the conditions as detailed in the Project Basis of Design CORP-GE-BOD-1001. The Supplier shall take these factors into account when selecting the design and size of the required equipment.

The Supplier's standard specifications shall be complementary to all referenced specifications, subject to approval by the Company's Representative. Should the Supplier utilise design codes other than those specifically referenced in this Specification, such design codes will be specifically listed in the Supplier's deliverable documents.

The latest revision of Complementary Requirements at the Contract Execution Date shall apply.

Any deviations from the Contract Requirements will only be permitted in accordance with the General Conditions of Contract.

Where the Supplier finds a conflict exists between the various Complementary Requirements, the disputes shall be referred to the Company's Representative, in writing, for resolution in accordance with the General Conditions of Contract.

As well as the specifications, standards, regulations and codes of practice referenced elsewhere in this specification the following shall form part of this specification and shall be the basis of any contractual agreement:

See appendix A for a list of reference documents.

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3.1 Statutory Requirements

The works shall comply with the following statutory requirements, relevant current Australian Standards and the related documents as applicable:

- a) Western Australian Work Health and Safety (WHS) Act (2020)
- b) Western Australian Work Health and Safety (WHS) (Mines) Regulations (2022)
- c) All other relevant statutory requirements
- d) All relevant Australian Standards
- e) Where Australian Standards, Codes and Regulations do not exist, those of the International Standards organization (ISO) or other standards shall apply

3.2 Standards

The applicable standards include but are not limited to the following:

Australian Standards

AS 1394	Round Steel Wire for Ropes
AS 1403	Design of Rotating Steel Shafts
AS1418	Cranes, Hoists and Winches – General Requirements
AS/NZS 1554	Part 1 & 5 – Welding of steel structures and structures subject to fatigue
AS 1755	Conveyors – Safety Requirements
AS 2550	Cranes, Hoists and Winches – Safe Use
AS 2741	Shackles
AS 3000	Wiring Rules
AS 3569	Steel Wire Ropes
AS 3990	Mechanical Equipment – Steelwork
AS 4024	Safeguarding of Machinery – General Principles

4 TECHNICAL REQUIREMENTS

4.1 Design Criteria

4.1.1 General

The conveyor take-up equipment shall be used in the festoon gravity take-up arrangement.

4.1.2 Operating Conditions

The operating environment is described in the Project Basis of Design, CORP-GE-BOD-1001.

4.1.3 Duty

The take-up system shall be supplied according to this specification and the Scope of Work for Conveyor Take-Up Equipment, L***-ME-SOW-0001.

4.2 Design Requirements

Equipment shall be designed to meet the following criteria:

- a) Safe continuous operation with minimal risk to plant and personnel
- b) Utilisation of optimum engineering practices to maximise equipment reliability, operability and maintainability

All material shall be new, premium quality and fit-for-purpose.

The requirements specified are the minimum allowable and the use of general industry codes and standards are permissible only when they equal or exceed the Company's detailed specifications.

Gravity Take-up components shall be rationalised where possible within the design requirements to minimise the spare holdings required.

All components will be rated for failure conditions, such as belt breakage or jamming of equipment.

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4.2.1 Festoon Take-Up System

The festoon system shall include a take-up winch, sheaves, wire rope and torpedo counterweight.

The festoon take-up system shall be used for placing the take-up mass in a maintenance position only and will generally be inactive with only the torpedo counterweight mass applied to prevent slack rope.

The Supplier shall be responsible for reviewing the Company specified counterweight mass for maintaining sufficient tension in the wire rope.

Sizing of sheaves and wire rope shall take into account the take-up mass, light loading and low utilisation of equipment.

4.2.2 Wire Rope

The wire rope selection shall be in accordance with AS 3569 and AS 1418.1 for the static mass of take up mass in conjunction with the existing standard SH630/CBC sheave systems.

Conveyor	Proposed Equipment Number	Take up mass
CV009	1304-HT-039	21 tonne
CV010	1304-HT-040	21 tonne

Minimum coefficient of utilisation (Z_p) of M5 mechanism class (AS 1418.1) on the maximum static mass of the take up weight shall be used unless otherwise approved by the Company Representative.

Minimum coefficient of utilisation (Z_p) for the reeved festoon take-up will be 3.55 for M3 mechanism class as below, and 4.00 for M4 mechanism (AS 1418.1), if approved by the Company representative.

Class	Minimum coefficient of utilisation (Z_p)
M3	3.55
M4	4.00
M5	4.50

Wire ropes shall be Right Hand Lang Lay or Right Hand Ordinary Lay, steel cord galvanised wire rope. The rope shall be Teufelberger Perfekt or approved equivalent. The rope grade shall be minimum 1960 MPa as standard.

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The wire rope shall be supplied to site with a terminated Open Spelter (or similar approved) socket end fitting at its non-winch end.

For festoon type take-ups the rope end shall be supplied to site suitable for connection to the torpedo counterweight, without on-site swaging.

4.2.3 Winch

The locking drum shall be fitted with a suitably rated spring-loaded ratchet and pawl system. The pawl shall be operable without risk of injury from the moving winch parts.

In addition, a secondary drum locking device shall be provided such as a mechanical pin arrangement. This pin shall be lockable so that the winch can not be operated with the lock in place.

The pawl shall be suitably guarded but allow the Operator can easy visibility if pawl is in open or closed position without risk of injury. The winch shall include a rope guide or a rope overlay device to ensure the correct reeving onto the drum.

The winch motor brake shall be electro-magnetic disk brake with capability to arrest a freefalling take up mass. The winch assembly shall be supplied complete with protection covers and guarding to be approved by the Company Representative.

Each winch shall be supplied with a locally mounted winch control system and pendant control. The minimum pendant length shall be 6 meters and shall include a pendant box for pendant protection.

The winch shall include overload protection, winch upper and lower rotary limit switch, final limit switch, mechanical and electrical interlocks on contactors and pendant controls

The electrical plug for power will be suitable for 63Amp Wilco welding socket outlet. The minimum cable length shall be 9 meters

The winch motor, gearbox, components and control panel shall be IP56 rated as a minimum to prevent dust and moisture ingress.

Winches shall be supplied with a stainless-steel nameplate including as a minimum, the following items:

1. Equipment Number
2. Manufacturer
3. Serial Number

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4. Date of Manufacture
5. Maximum Rated Capacity in tonnes
6. Wire Rope Construction including Diameter, Grade, Type, Lay, Length, Minimum Breaking Load
7. Motor Power requirements in kW

The nameplate layout shall be approved by the Company Representative prior to fitment.

4.2.4 Sheave

Sheaves shall be supplied suitable for the nominated rope size with at least two rope guides and multiple rope guide mounting options.

A minimum safety factor of M5 (AS 1418.1) on the maximum static mass of the take up weight shall be used unless otherwise approved by the Company Representative.

Class	Sheave Factor of Safety
M3	16
M5	20

The wire rope guides shall preferably allow reeving of the wire rope complete with spelter socket ends.

4.2.5 Electrical

All electrical equipment shall be supplied in accordance with CORP-EL-SPC-1002 (*1300-EL-SPC-1004*), Equipment Forming Part of Mechanical Packages.

Electrical components shall be supplied according to the preferred equipment list, CORP-GE-LST-1007 unless otherwise approved by the Company Representative.

All drive motors shall be approved by the Company Representative.

Electrical equipment shall be protected to a minimum of IP65. Electrical enclosures shall be a minimum stainless steel 304.

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4.2.6 Inter-changeability

All similar parts shall be interchangeable for the rationalisation and minimisation of spares inventories.

4.3 Manufacture

4.3.1 General

All fabrication shall be in accordance with the Manufacturer's standard procedures, this specification and the Relevant Australian Standard, unless noted otherwise.

4.3.2 Surface Treatment

Surface protection of all equipment and associated steelwork generally shall be to the Manufacturer's own standard finish, subject to conformance to CORP-GE-SPC-1002, Technical Specification for Surface Treatment of Structural Steelwork and Pipework. Quality Assurance

The Supplier shall be responsible for all quality management activities necessary to assure that the Work meets project requirements, including the activities of subcontractors and sub-suppliers and shall be read in conjunction with the Supplier Quality Requirements Specification, CORP-QA-SPC-1001.

4.4 Inspection and Testing

The Company Representative shall have access at all reasonable times to those parts of the manufacturing facilities engaged in the manufacture of items in this specification in accordance with the General Conditions of Contract.

The Company Representative shall be authorised to witness any stage of manufacture, test and inspection documentation, and shall be authorised to reject any item that does not conform to the requirements of this specification in accordance with the General Conditions of Contract.

All Equipment shall be inspected at the Supplier's works prior to packaging and delivery to demonstrate compliance with this specification. Equipment shall be shop assembled and dimensionally checked following assembly.

The Supplier shall provide the Company Representative with all inspection records, laboratory certificates and any other documentation deemed by the Company Representative, or their representatives, to be required for verification of materials used or work done. Such data shall be delivered from time to time as requested by the Company Representative and shall, in addition, be delivered to the Company Representative as part of a bound inspection record at the time each completed piece of equipment is delivered ex-works.

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A test program shall be submitted for approval. Test certificates shall be supplied to confirm that the Equipment conforms to the requirements of this specification and the relevant sections of AS 1418 and AS 2550. Testing shall include load testing with certified masses. Electrical and Instrumentation testing shall be carried out in accordance with Technical Specification – Electrical Requirements for Mechanical Packages, CORP-EL-SPC-1002. *(1300-EL-SPC-1004)*

4.5 Company Representative's Inspection Level

The Company Representative Inspection Level is Level C. For further details on Inspection level please refer to the Supplier Quality Requirements Specification, CORP-QA-SPC-1001.

4.6 Packing

All completed take-up equipment shall be packed in accordance with CORP-GE-SPC-1002, packaging and marking specification.

All components shall be packed so that they are easily identifiable according to the conveyor number.

Equipment shall be matchmarked and clearly labelled so that locating and assembling of equipment on site is as easy as possible.

5 PERFORMANCE WARRANTIES

5.1 Performance Warranties

The Supplier shall warrant that the supplied Equipment meets the criteria specified in the relevant Scope of Work.

The Supplier shall remain responsible for rectification of Equipment which does not achieve the performance requirements and payment of any Performance Damages under the Contract.

The supplier shall be responsible for warranting all equipment within its scope of supply and installation for a period of at least 24 months after installation or as otherwise specified in the Contract.

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APPENDIX A: REFERENCE DOCUMENTS

SPECIFICATION NUMBER	DESCRIPTION
CORP-AD-SPC-1001	SUPPLIER DATA INSTRUCTION SPECIFICATION
CORP-QA-SPC-1001	SUPPLIER QUALITY REQUIREMENTS SPECIFICATION
CORP-GE-BOD-1001	PROJECT BASIS OF DESIGN
CORP-EL-SPC-1002 <i>1300-EL-SPC-1004</i>	SPECIFICATION – ELECTRICAL REQUIREMENTS FOR MECHANICAL PACKAGES (REFER TO 1300-EL-SPC-1004)
CORP-GE-LST-1007	PREFERRED EQUIPMENT LIST
CORP-GE-SPC-1002	SPECIFICATION FOR THE SURFACE TREATMENT OF STRUCTURAL STEELWORK AND PIPEWORK
CORP-GE-SPC-1002	SPECIFICATION FOR PACKING, MARKING AND DOCUMENTATION REQUIREMENTS
L262M-ME-SOW-0001	SCOPE OF WORK FOR CONVEYOR TAKE-UP EQUIPMENT (STAGE 1)
L262M-SDRL-01L262M	SUPPLIER DATA REQUIREMENTS LIST FOR CONVEYOR TAKE-UP EQUIPMENT