**Part A. Create a set of notes on the following questions using your own research and the information from the field trip. 50% of marks**

1. How much money does Western Australia make from the mining industry approximately and how many people does it employ? (1 mark)

$88 billion

1. What are the main minerals mined for in Western Australia? (2 marks)

Gold 10%, iron 54%, petroleum 23% - others copper, lead, zinc, nickel, lithium, mineral sands-diamonds, coal, salt and rare earth metals *(1 mark for basic minerals, 2 marks for most minerals)*

1. What are the main environmental issues that arise with large scale open pit mining such as the Super Pit?

* Destruction of natural habitat,
* loss of native species (biodiversity),
* change in landscape – plants that use to grow there can no longer grow (change in abiotic and biotic factors)
* change to water runoff patterns – move water resources
* landscape unfit for use as dangerous equipment, unstable ground, poisonous chemicals
* chemicals poison ground and water resources so no longer fit for use
* influx of people in an area where limited resouces

(3 marks – 1 mark basic issues stated, 2 marks basic issues explained, 3 marks issues discussed in detail and range covered)

1. What is KCGM’s responsibility to all groups within the community in terms of their environmental impact on the environment during mining and after the pit closes?

|  |  |
| --- | --- |
| **Description** | **Mark** |
| Have a Mine Closure Plan approved by the relevant government departments and implement it. (DMP, DER, DPAW, DPI, WAPC, CBK, DoW, DAA) | 1 |
| * Study ecosystem prior to mining and then try and restore as near as possible after * Carry out progressive rehabilitation of waste rock dumps and tailings storage facilities * Early rehabilitation reduces dust and improves visual aspect * Establish modified natural vegetation communities on stable landforms * Monitor the rehabilitation process and improve as go along * development of a green belt between the mine and the community * any other suitable answer | Any 3 points |
| Aboriginal culturally significant sites are protected by law and it is the intention of KCGM to abide by these laws and do all it can to assist in the protection and respect of any such sites that fall within KCGM’s area of influence. | 1 |
| * Aboriginal sites that lie within the vicinity of KCGM’s operations are properly respected and protected; * Significant heritage sites are preserved; * All such sites are identified and locations and access conditions communicated to employees and contractors as appropriate. * Any other suitable answer | Any 2 points |
|  | **Max 7** |

1. Where does the data come from that is needed to make decisions about how rehabilitation needs to be carried out? Examples of answers could be:

* Ecologists research proposed site and surroundings to establish ecological statistics (flora/fauna
* Geologists to give data on landscape, where ore is and profile of landscape/soil/rock strata
* Where the ore is and how it can be extracted
* Aboriginal Elders/community – info on original site, sites of significance etc

(2 marks for 2 places data could come from)

1. What is a waste rock dump and how are they used at KCGM?

* Where waste rock is dumped after being removed from digging site (1)
* Waste rock does not contain anything that is of use (1)
* Build noise/dust barrier between town and mine site **OR**
* Build mounds where future rehabilitation will take place (1)

1. What factors have to be considered when creating a design for the waste dump?

|  |  |
| --- | --- |
| Description | marks |
| * Work out what type of rock is going to be dumped * What size the rock is that is going to be dumped * What material is in the waste rock * Any other suitable answer | Max 2 points |
| Use information to decide how much they can dump, how high the pile can be and at what angle the dump has to be made at – at least two ways info is used | 1 |
|  | Total 3 |

1. What kinds of tests are carried out to collect the information needed to rehabilitate?

Water run off – check angle to make sure trenches don’t appear when rains

Types of seeds that might grow

How much soil to mix in with rock

How to mix in soil with rock

2 marks for 2 tests and 2 marks for what information they are gathering

1. Once the waste dump has been created what are the next steps to be carried out to start the rehabilitation of the land?

* The waste rock is reshaped to a smaller angle
* Top soil is mixed in with the rock
* Ground left for soil to mix with rock
* Seeds are then sown by hand
* Vegetation left to grow and the growth monitored

4 marks for a maximum of 4 steps

1. Once the final steps have been complete why is constant monitoring of the waste dump carried out?
   * To get sign off from the various government agencies
   * To check the success of the methods used for future projects
2. Have all the rehabilitation projects undertaken at KCGM been as successful? Give an example.

No, (1)

As research has improved, practises improve and more success is obtained. – Croesus Noise Bund (1)

1. Why is the waste rock not put back where it came from?

2 suitable reasons – 2 marks

Notes from field trip

1 mark for question if suitable answered/filled in total 34 marks