

## 100% sheet

Year 11
Using Earth's resources

| PiXL<br>Partners in excellence  |   |  | Natural resources and   | resources  | <b>-</b> 1   | Sterilising agents include chlorine, ozone and UV light.  |                           | able<br>ater    | a                    | appropri   | er of an<br>ate quality<br>rial for life   | low le   | vels of disso<br>bes. This is c                               | ater should have<br>lved salts and<br>alled potable  | PixL  |
|---|---|--|---|--|--|---|---------------------------|-----------------|----------------------|--|--|--|---|--|-------|
| Earth's<br>resource   | Used to provide warmth, shelter, food and transport |  | from agriculture provide: timber, food, clothing and fuels.   |  | water water  |   | UK water                  |                 |                      | Rain provides water<br>with low levels of<br>dissolved |  | This water collects in the ground/lakes/rivers. To make potable water an appropriate source is                           |   | ı  |       |
|   | <del>-</del>  | humans   | Finite resources from the Earth, oceans and atmosphere are processed to provide energy and materials.   |  |  | Osing the Earth's resources and leavelopment  |                           |                 |                      | substances  Needs to occur                             |  | chosen, which is then passed through   |   | n sterilised.  | ı     |
| Chemistry and resources  Research and techniques improve agricultural and industrial processes  |   | These improvements provide new products and improve sustainability.  |   |  | Using the Earth's  | Desal   | ination limited salty/sea |                 | by usi               |  | can be achieved by distillation or sing large membranes e.g. rse osmosis. These processes ire large amounts of energy. |  | ı   |  |       |
| industrial p  |   | ui processes   | However, the raw mat  | terial ethene                                    | -  | resources and   |                           |                 |                      |  | Waste wa   | ater tr  | eatment   |  |       |
| Plastics using (  |   | nally made<br>ethene from<br>ude oil   | can also be obtained from ethanol, which can be produced during fermentation. Industries are now starting to use a renewable crop for this process. |  |  | obtaining potable water  AQA GCSE Using   |                           | als (HT)        | Waste water          |  | Produced for urban lifest and indust processed   | the environment. Sewage needs organic matter and harmful micro   |   | the  |       |
| Life cycle assessments are carried out to assess the environmental impact of  Life cycle assessed at these stages: - Extraction and processing raw materials - Manufacturing and packaging lifetime |   | Life cycle ass   |   | resources 1  Life cycle assessment and recycling | Alternative methods of   | extracting metals   |                           | ewage<br>atment | Includes m<br>stages | <i>•</i>   | <ul><li>Sediment<br/>effluent (</li><li>Anaerobi</li></ul>   | g and grit removal<br>tation to produce slud<br>liquid waste or sewag<br>c digestion of sludge<br>piological treatment o | ge).  |  |       |
| Values  | Allocatin<br>numerical vo<br>to polluta             | <ul> <li>products         <ul> <li>Disposal</li> </ul> </li> <li>Allocating merical values to pollutant</li> <li>Value judgments are allocated to the effects of pollutants so LCA is</li> </ul> |   | A is   | Ways of reducing th  |   | · ·                       | IV              | /letals o            | ores   | These resou<br>limite  |  | becomextract  | r ores especially are<br>ning sparse. New ways<br>ting copper from low-<br>re being developed. |       |
| effects is not a pui  |   |  |   |  | use of resources  , reduces energy sources being   |   | Ph                        | hytomir         | ning                 | Plants absor   |  | and bu   | plants are then harve<br>urned; their ash conta<br>compounds. |  |       |
| Reduce, reuse and recycle   |   | in I linis strateav realices the lise at I   |   | es v   | es waste (landfill) and reduces  |   |                           |                 | Bacteria is used to  |  | ) I  | The metal compounds can be processed to obtain the metal   |   |  |       |
| Limited raw materials   |   | materials, plastics and clay  ceramics  comes from materials f   |   | comes from materials fro                         | n lim<br>om  | energy required for these processes limited resources. Obtaining raw om the Earth by quarrying and mining |                           | Ві              | Bioleach             | ning   | produce le<br>solutions tha<br>metal com   | t conta  | from it<br>obtain   | t e.g. copper can be ed from its compound cement or electrolysis                               | ds by |
| Reusing and recycling   |   | Metals can be recycled by melting melted to  |   | Glass bottle                                     | bottles can be reused. They are crushed and ed to make different glass products. Products cannot be reused are recycled. |   |                           |                 |                      |  |  |  |   |  |       |

| Partners in excellence                                     |  | Sterilising agents include chlorine, ozone and UV light.  |  |  |                        | Water of an appropriate quality is essential for life |  | rinking water should have<br>s of dissolved salts and<br>This is called potable | PIXL   |   |        |
|--|--|---|--|--|------------------------|---|--|---|--|---|--------|
| wari<br>food o   | d to provide<br>mth, shelter,<br>and transport<br>or humans  | from agriculture provide: timber, food, clothing and fuels.  Finite resources from the Earth, oceans and atmosphere are processed to provide energy and materials.  These improvements provide new products and improve sustainability. |  | Using the Earth's resources and sources and botable water  |                        |   | Rain provides water<br>with low levels of<br>dissolved<br>substances |   | This water collects in the ground/lakes/rivers. To make potable water an appropriate source is chosen, which is then passed through filter beds and then sterilised. |   |        |
| techni<br>agri   | search and iques improve cultural and  |   |  | Using the Earth's  |                        |   | fresh<br>limit<br>salty/se   | to occur is<br>water is<br>ed and<br>ea water is<br>for drinking                | by using la<br>reverse os  | ne achieved by distillation or arge membranes e.g. smosis. These processes rge amounts of energy.   | s      |
| Nor<br>using   | Normally made using ethene from crude oil  |   | erial ethene rom produced ndustries e a s process. | resources and obtaining potable water  AQA GCSE Using resources 1  Life cycle assessment and recycling | thods of               | metals (HT)   |  | Produced for urban lifest and indust processes                                  | the environment. Sewage need organic matter and harmful m  |   | ds the |
| assessmen<br>carried of<br>assess t<br>environme<br>impact | Life cycle assessments are carried out to assess the environmental impact of  They are as - Extraction materials - Manufact - Use and lifetime |   | Life cycle ass                                     |  | Alternative methods of | extracting met  |  | Includes many stages - /  |  | Screening and grit removal Sedimentation to produce sludefluent (liquid waste or sewage Anaerobic digestion of sludge Aerobic biological treatment ceffluent. | ge).   |
| Allocati numerical to pollut effects                       | ing<br>values Value j  | udgments are allocated to ects of pollutants so LCA is ourely objective process.  | A is   | Ways of reducing the   |                        |   |  | These resou<br>limite   |  | Copper ores especially are becoming sparse. New way extracting copper from low ores are being developed.  |        |
| difficu  | This strategy reduces the use of limited resources  Used for metals, glass, building materials, plastics and clay                              |   | This, therefor                                     | re, reduces energy sources being   |                        |   |  | Plants absor  |  | These plants are then harve and burned; their ash conta metal compounds.  |        |
|  |  |   | environment  | uces waste (landfill) and reduces ental impacts.  ne energy required for these processes               |                        |   |  | Bacteria is used to produce leachate solutions that contain                     |  | The metal compounds can be processed to obtain the metal from it e.g. copper can be   |        |
|  |  |   | materials fro                                      | limited resources. Obtaining raw methe Earth by quarrying and minir onmental impacts.                  | ng [                   |   |  | metal compounds   |  | obtained from its compoun displacement or electrolysis  | -      |
|  |  | ne recycled by melting asting/reforming   | melted to ma                                       | can be reused. They are crushed a<br>ake different glass products. Produc<br>se reused are recycled.   |                        |   |  |   |  |   |        |

| PiXL<br>Partners in excellence | e.e |   | Nehmel  |   | Sterilising agents chlorine, ozone al light.      |                 |                        | able<br>iter |                     |  | low leve<br>microbe  | drinking water should have<br>els of dissolved salts and<br>es. This is called potable               | PiXL scien |
|--------------------------------|-----|---|---|---|---|-----------------|------------------------|--------------|---------------------|--|--|--|------------|
| Earth's<br>resource            |     | Natural resources a from agriculture pro food, clothing and f |   | de: timber,<br>s.   | Using the Earth's resources and sustainable water |                 | UK v                   | JK water     |                     |  | water.  This water collects in the ground/lakes/rivers. To make potable water an appropriate source is chosen, which is then passed through  |  |            |
|                                |     |   | oceans and atmosphere are processed to provide energy and materials.  |   |   |                 |                        |              |                     |  | Filter beds and then sterilised.  This can be achieved by distillation or  |  |            |
| Chemistry<br>and<br>resources  |     |   | These improvements provide new products and improve sustainability.   |   | Using the Earth's                                 |                 | Desalination           |              | on .                |  | by using large membranes e.g. reverse osmosis. These processes require large amounts of energy.  |  |            |
| 1.05041.050                    |     | However, the raw material eth                                 |   | erial ethene  | resources and                                     | Waste           |                        |              | water treatment     |  |  |  |            |
| Plastics                       |     |   | can also be obtained from ethanol, which can be produced during fermentation. Industries are now starting to use a renewable crop for this process. |   | obtaining potable water  AQA GCSE Using           |                 | methods of metals (HT) | rais (HI)    | Waste<br>water      |  | th<br>or   | nese require treatment before use environment. Sewage needs reganic matter and harmful microsemoved. | the        |
| LCAS                           |     | - Exti<br>mai<br>- Ma<br>- Use                                | are assessed at these stages: traction and processing raw aterials anufacturing and packaging se and operation during etime                         |   | Life cycle assessment and recycling               | ycle<br>ent and | Alternative methods of | Sulp         | Sewage<br>treatment |  | <ul> <li>Screening and grit removal</li> <li>Sedimentation to produce sludge and effluent (liquid waste or sewage).</li> <li>Anaerobic digestion of sludge</li> <li>Aerobic biological treatment of effluent.</li> </ul> |  | ge).       |
| Values                         |     | Value j   | judgments are allocated t<br>fects of pollutants so LCA<br>purely objective process.  |   | Ways of reducing the                              |                 | Meta                   | als ores     | bed<br>ext          |  | Copper ores especially are becoming sparse. New ways extracting copper from low-ores are being developed.  |  |            |
|                                |     |   | June 17 Objective process.  | This therefo  | use of resou                                      | irces           |                        | Phyto        | omining             |  |  | These plants are then harve and burned; their ash contametal compounds.                              | <b>I</b>   |
| Reduce, reuse and recycle      |     |   |   | re, reduces energy sources being es waste (landfill) and reduces eal impacts.   |   |                 |                        |              |                     |  | The metal compounds can l  |  |            |
| Limited raw materials          |     | comes from I materials fro                                    |   | energy required for these processes<br>limited resources. Obtaining raw<br>m the Earth by quarrying and mining<br>onmental impacts. |   |                 | Biole                  | eaching      |                     |  | from it e.g. copper can be obtained from its compoun displacement or electrolysis  | · I  |            |
| Reusing and recycling          |     | Glass bottles melted to ma                                    |   | s can be reused. They are crushed and ake different glass products. Products be reused are recycled.                                |   |                 |                        |              |                     |  |  |  |            |

