4.

4. There are 3 sides to fence, two sides with length b and one side with length a:

$a + b + b = 3153 \implies a = 3153 - 2b$

Now find the area:

$area = a \times b = (l - 2b) b = 3153\,b - 2\,b^2$

Notice the Parabolic equation, find the vertex:

$vertex = (\frac{3153}{4}\ m\ ,\ \frac{9\,941\,409}{8}\ m^2\ )$

Square the unit for vertex's vertical coordinate since it is a quadratic.