The heuristic is as follows.

Let M be the manhattan distance.

If $M > 1$ then our heuristic H is equal to $2M - 1$. Otherwise, $H = M$.

This clearly dominates the manhattan distance heuristic, as it is always greater than or equal to it. However we must now show that it is admissible.

The first thing we must notice is that there are exactly two empty tiles in the puzzle. In order to move the goal tile closer to the goal, the two empty spaces must be adjacent to the goal tile in the direction we want to move in. However, after we already moved. The empty spaces move directly behind the goal tile and the goal tile is only capable of moving backwards (which does not advance the puzzle). It therefore takes at least 1 move (I think it's actually closer to 3) to move the empty spaces back to a place where the goal tile can move forward again.

Therefore the first move in a position is only counted once because it is possible that the empty spaces are already in the correct position. From the second move onwards, the empty spaces must be moved back to the correct position, which takes at least 1 move. Therefore we count every move closer to the goal twice.

Then assuming that we are moving the goal piece closer to the goal in a optimal manner. It takes M moves to move the goal piece to the goal. Then it takes $M - 1$ moves to move the empty spaces back to the correct position. Therefore the total number of moves is $2M - 1$. (unless we are already just one move away from the goal, in which case it's just M moves to prevent weird negative numbers)