We consider quantum motion on a metric graph Γ as limit of the solutions of Schreodinger's equation in presence of a potential which is zero on the graph and increases steeply off the graph when a small paramter $\epsilon \to 0$. Denote by Γ^0 the open set obtaind by deleting the vertices. Using energy estimates we prove that the L^2 content of the solution near the vertices and also far away from the graph are negligible. In the remaining regions, we introduce channels corresponding to the transverse modes. We prove by Sobolev estimates that the channels decouple weakly and within each channel the solution converges weakly on Γ^0 to a weak solution of the Schroedinger eq. on the graph. Using energy estimates, we prove strong decoupling and that the limit function is of class C^2 on the graph. We conclude that for each initial datum $f(x)$ on Γ^0 and for each tranverse eigenfunction ξ_n^ϵ there is in the limit $\epsilon \to 0$ a function on Γ^0 which solves Schroedinger's equation and is the limit of the projection of the quantum flow on Γ^0. In general this construction does not generate a flow on Γ^0, the reason being that one does not have enough control at the vertices. We give two simple examples where full control can be achieved. One is a graph consisting of a single straight line with constraining potential varying along the line. The other is a sequence of smooth curves converging to a curve with single sharp bent. In both cases the limit dynamics in hamitonian and the generator is the Laplacian with Dirichlet boundary conditions.