SUPPLEMENTARY FILE E

Model 1

The full regression equation for model 1 is as follows:

$$h(t) = h_0(t) * \exp\left(-0.065 * Age + 0.78 * \ln(PSA) + 0.053 * GTV - 0.14 * PSADT + 0.16 * PSADT'\right)$$

Or for calculating the predicted survival probability:

$$s(t) = s_0(t)^{\exp\left(-0.065 * Age + 0.78 * \ln(PSA) + 0.053 * GTV - 0.14 * PSADT + 0.16 * PSADT'\right)}$$

Where:

h(t) = the expected hazard at time *t*

$h_0(t)$ = the baseline hazard at time *t*

s(t) = the expected survival probability at time t

$s_0(t)$ = the baseline survival at time *t (see Table 2 for baseline survival at 12, 24, and 36 months)*

Age = age in years at time of FS-HDR-BT

ln = natural logarithm

PSA = pre-salvage PSA level in ng/mL

GTV = gross tumour volume in cm^3

PSADT = PSA doubling time in months

PSADT' can be calculated as follows:

$$PSADT' = \frac{(PSADT - 7.98)_+^3 - 1.43(PSADT - 15.70)_+^3 + 0.44(PSADT - 33.63)_+^3}{657.9225}$$

Model 2:

$$h(t) = h_0(t) * \exp\left(-0.087 * Age + 1.50 * \ln(PSA) + 0.40 * Seminal\ vesicle\ involment - 0.12 * PSADT + 0.15 * PSADT' - 0.20 * Time\ to\ PSA\ nadir - 0.021 * \%PSA\ reduction\right)$$

Or for calculating the predicted survival probability:

$$s(t) = s_0(t)^{\exp\left(-0.087*Age + 1.50*\ln(PSA) + 0.40*Seminal\ vesicle\ involvement - 0.12*PSADT + 0.15*PSADT' - 0.20*Time\ to\ PSA\ nadir - 0.021*\%PSA\ reduction\right)}$$

Where:

h(t) = the expected hazard at time *t*

$h_0(t)$ = the baseline hazard at time *t*

s(t) = the expected survival probability at time t

$s_0(t)$ = the baseline survival at time *t (see Table 2 for baseline survival at 12, 24, and 36 months)*

Age = age in years at time of FS-HDR-BT

ln = natural logarithm

PSA = pre-salvage PSA level in ng/mL

Seminal vesicle involvement = 0 when not applicable, 1 when applicable

Time to PSA nadir = post-salvage time to nadir in months

%PSA reduction = PSA reduction (ratio between pre-salvage PSA and post-salvage PSA nadir) in %

PSADT = PSA doubling time in months

PSADT' can be calculated as follows:

$$PSADT' = \frac{(PSADT - 7.98)_+^3 - 1.43(PSADT - 15.70)_+^3 + 0.44(PSADT - 33.63)_+^3}{657.9225}$$