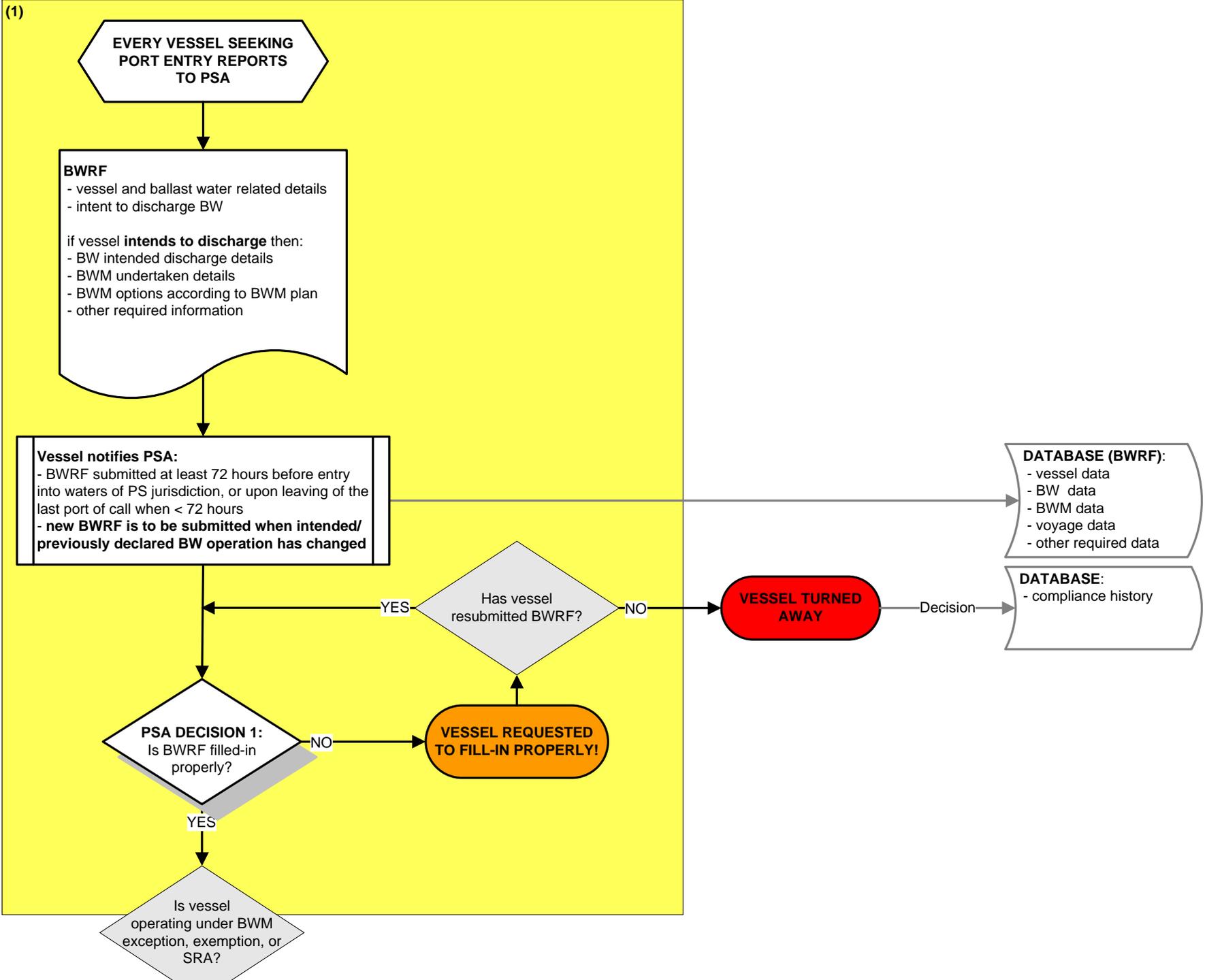
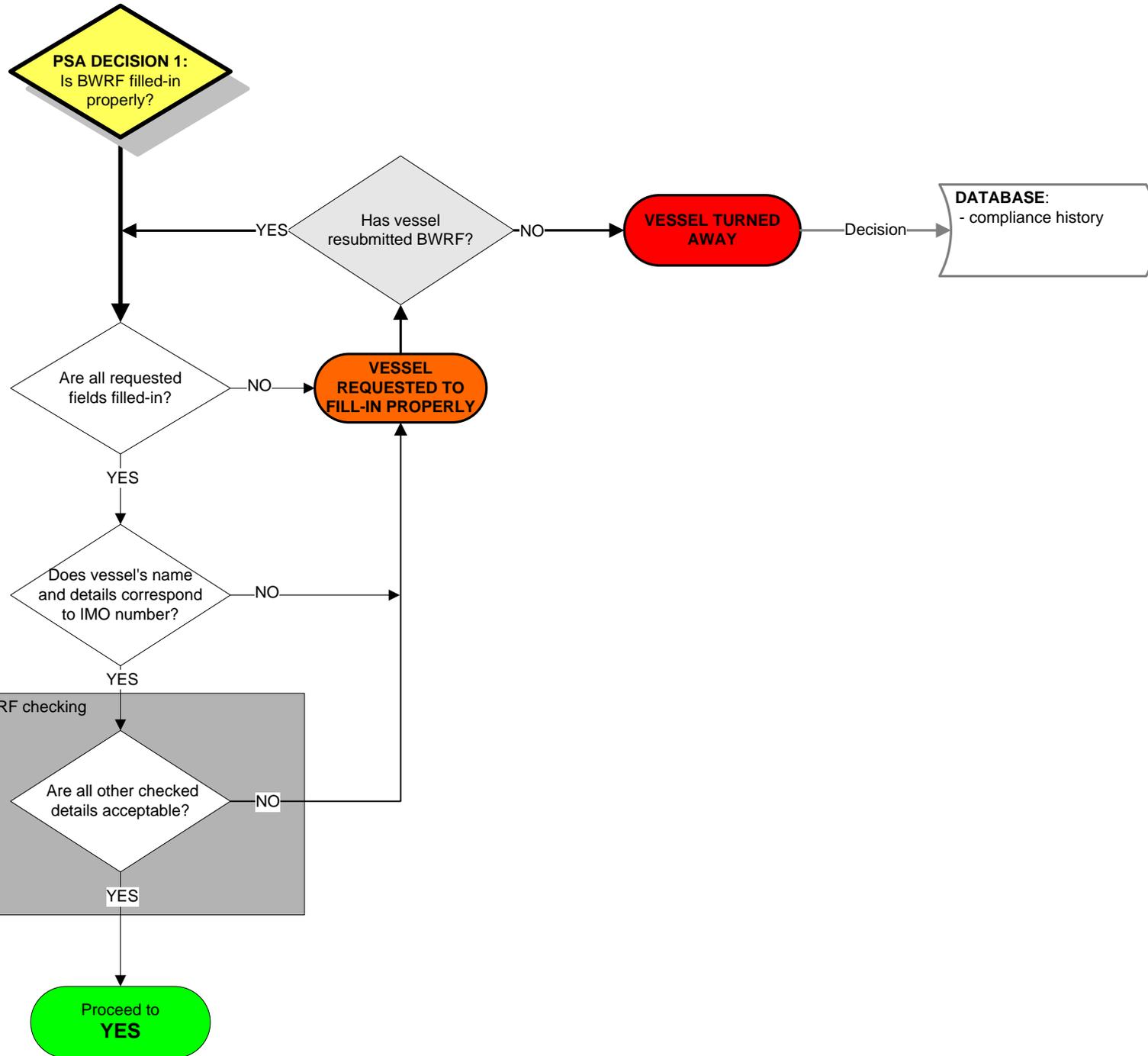
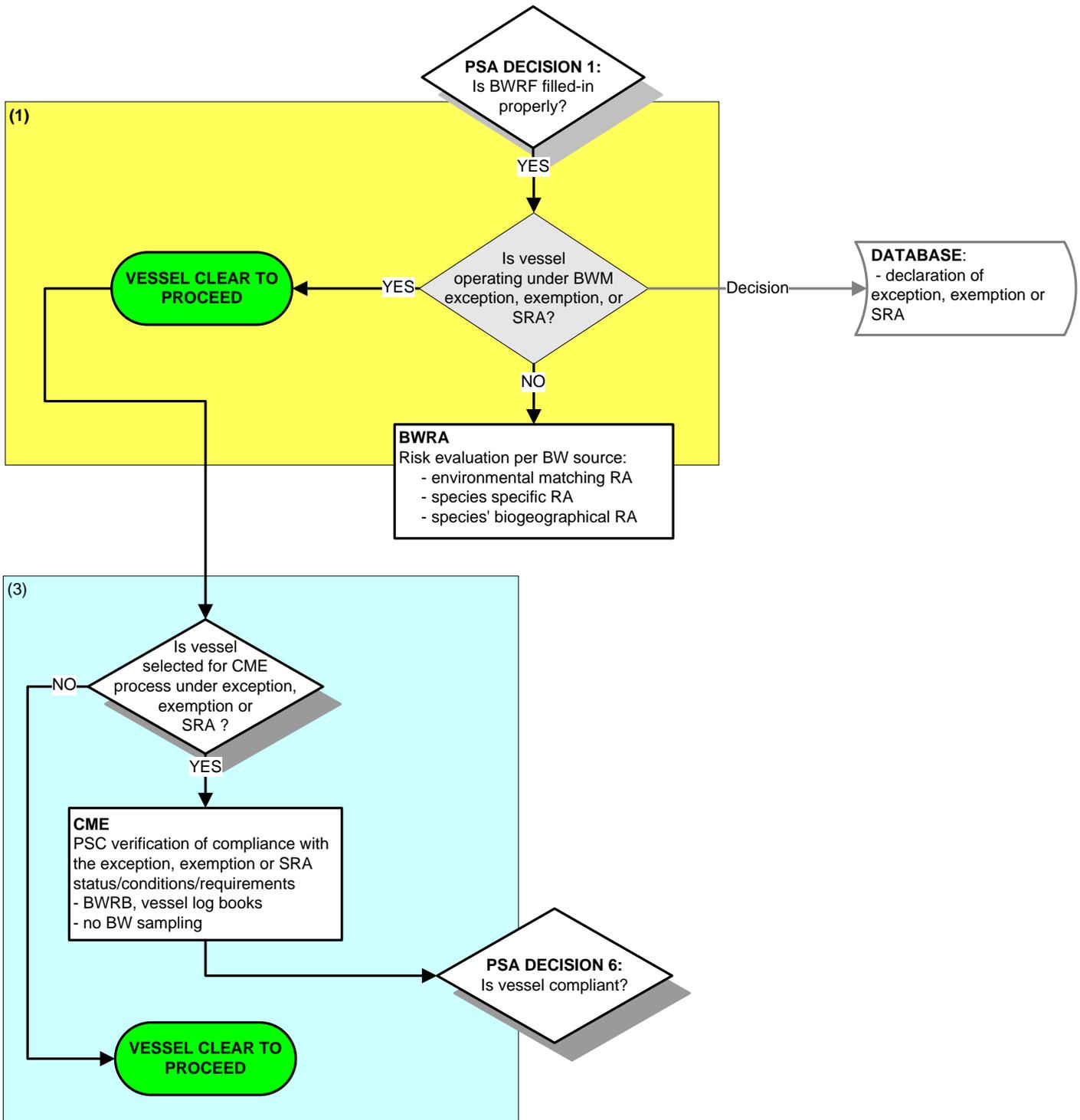


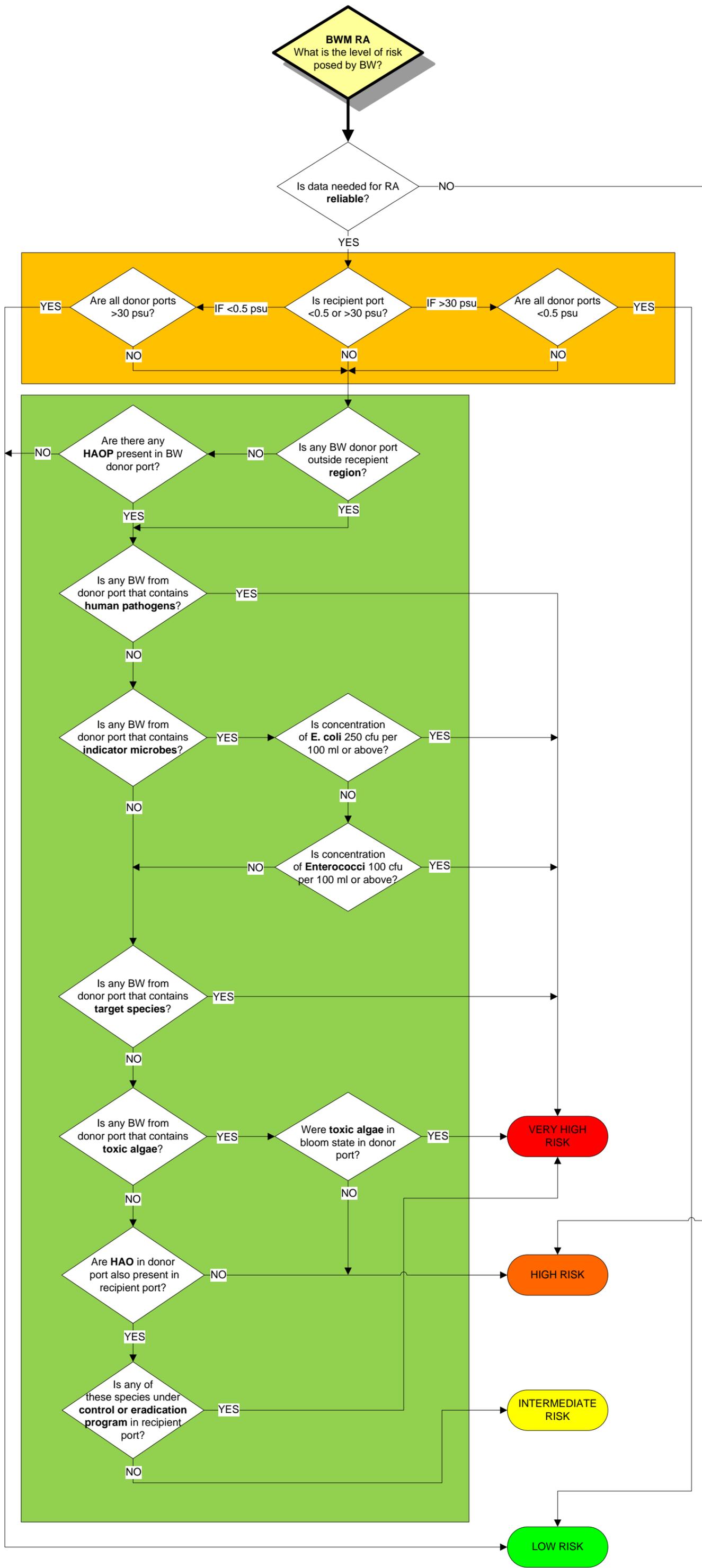
(1)





- BWRf (self)checking process:**
- BW source port data vs. data on ports;
 - number of BW tanks in ballast vs. total number of BW tanks;
 - quantity of BW onboard vs. total BW capacity;
 - cargo operation vs. vessels DWT;
 - BW operation vs. BW Discharge Assessment Model result;
 - quantity of BW to be discharged vs. BW Discharge Assessment Model result;
 - number of tanks to be discharged vs. number of BW tanks in ballast;
 - number of BW tanks managed vs. number of BW tanks declared for discharge;
 - quantity of BW managed vs. quantity of BW to be discharged;
 - number of BW tanks managed vs. number of all tanks in ballast;
 - conducted BWM vs. data required elsewhere in the BWRf;
 - other data comparison requirements.





BWM RA
What is the level of risk
posed by BW?

Is data needed for RA
reliable?

Are all donor ports >30 psu?

IF <0.5 psu

Is recipient port <0.5 or >30 psu?

IF >30 psu

Are all donor ports <0.5 psu?

Is any BW donor port outside recipient region?

Are there any HAOP present in BW donor port?

Is any BW from donor port that contains human pathogens?

Is any BW from donor port that contains indicator microbes?

Is concentration of E. coli 250 cfu per 100 ml or above?

Is concentration of Enterococci 100 cfu per 100 ml or above?

Is any BW from donor port that contains target species?

Is any BW from donor port that contains toxic algae?

Were toxic algae in bloom state in donor port?

Are HAO in donor port also present in recipient port?

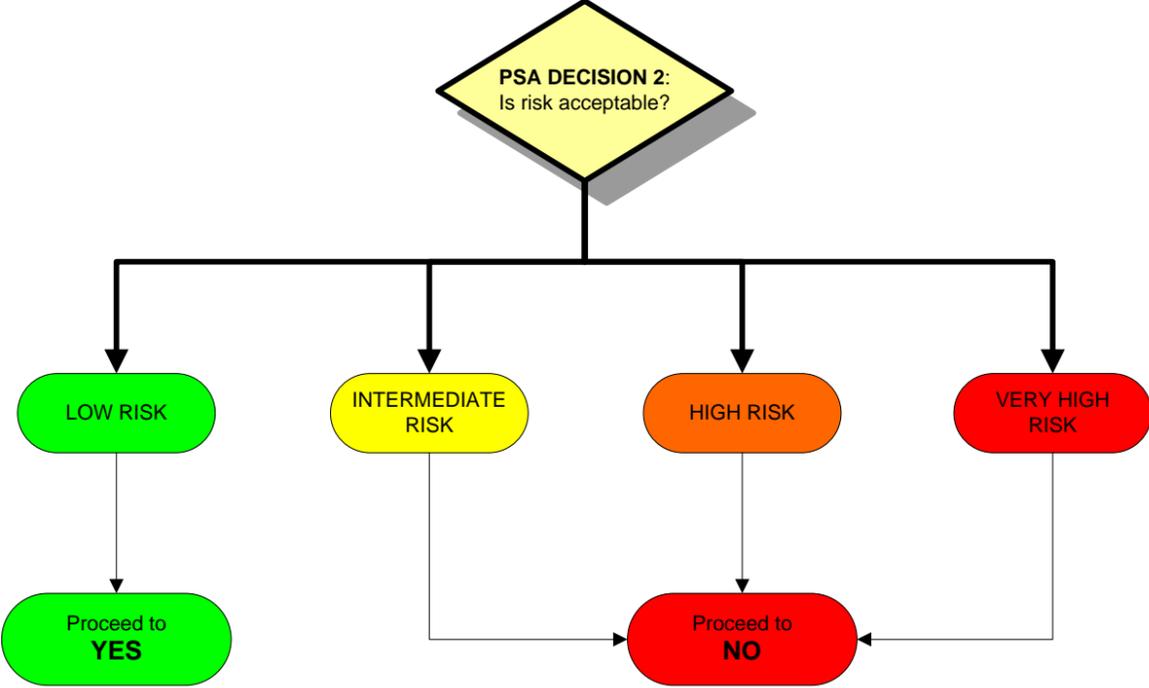
Is any of these species under control or eradication program in recipient port?

VERY HIGH RISK

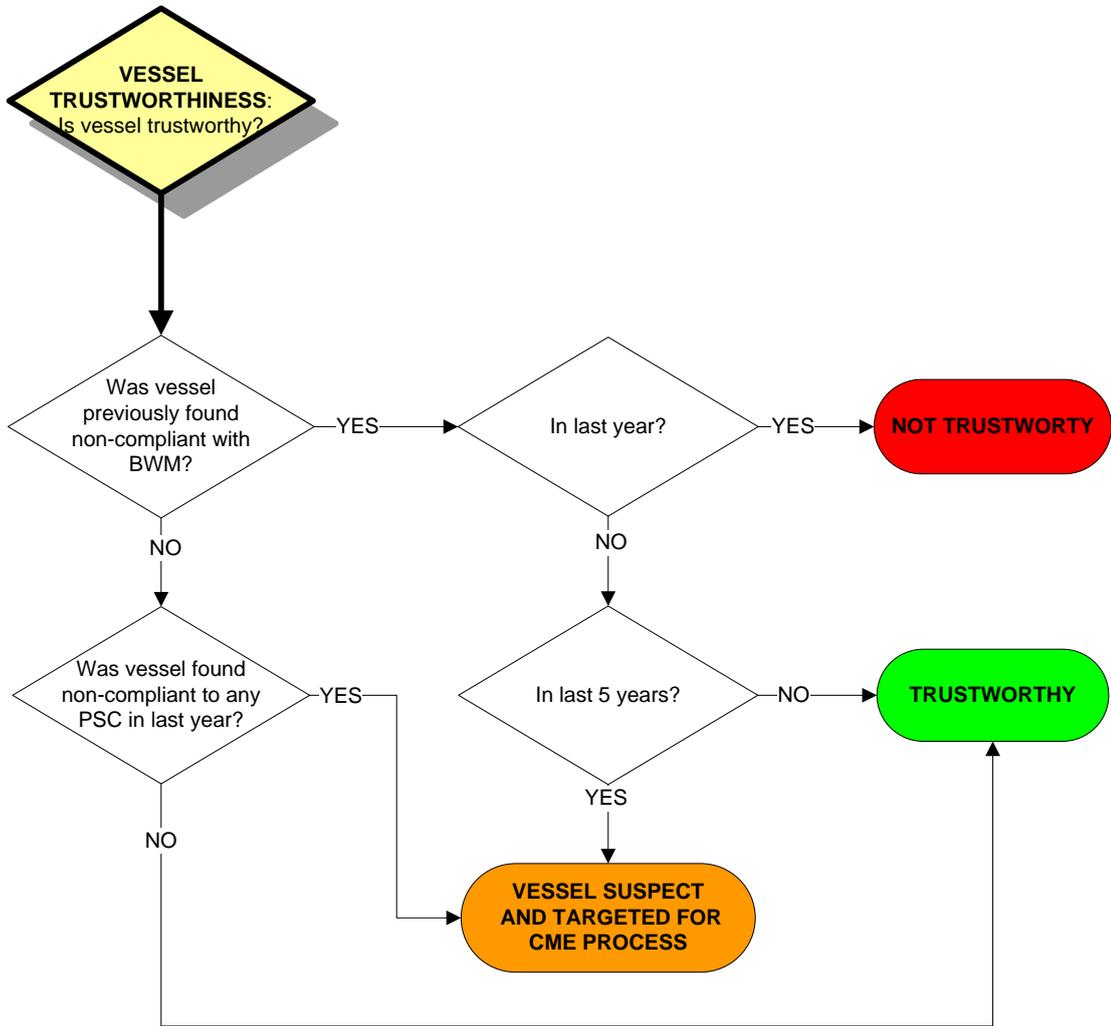
HIGH RISK

INTERMEDIATE RISK

LOW RISK

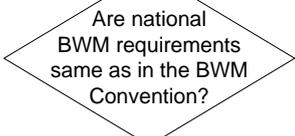








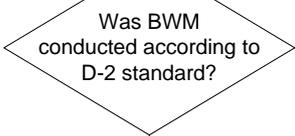
BWM method acceptability verification process is conducted tank by tank.



YES

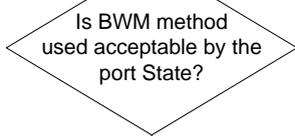
NO

PSA compares BWRf with port State approved BWM methods and associated requirements



YES

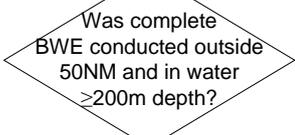
BWMS used:
vessel crew need to follow procedures and requirements of the BWMS manufacturer and classification society



YES

NO

NO

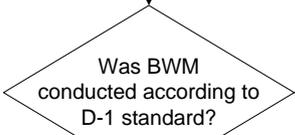


YES

NO

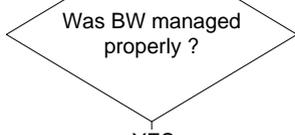
Depending on method used evaluate against the check list below:

<p>Sequential (empty-refill) method</p> <p>1. at least 95 percent of the volume of the ballast water in the tank should be exchanged</p> <p>Verification process: - check quantity of exchanged BW against the total volume of BW in the tank $EBW / TBW * 100 = X \% (X \geq 95)$ - if X is < 95 then BWM is not acceptable</p>	<p>Flow-through and dilution methods</p> <p>1. at least three times the volume of the ballast water in the tank should be exchanged. 2. pumping through less than three times the volume may be accepted provided the vessel can demonstrate that at least 95 percent of the volume of the ballast water in the tank was exchanged</p> <p>Verification process: - check quantity of exchanged BW against the total volume of BW in the tank $EBW = 3 * TBW$; - if EBW is < $3 * TBW$, then did the vessel demonstrate equivalent compliance in the BWRf communication? - if not, then check the compliance history database for demonstration that < $3 * TBW$ is acceptable (as recorded in vessels BWMP) - if no record in the compliance history database, or by communication from vessel then BWM is not acceptable</p>
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YES

NO

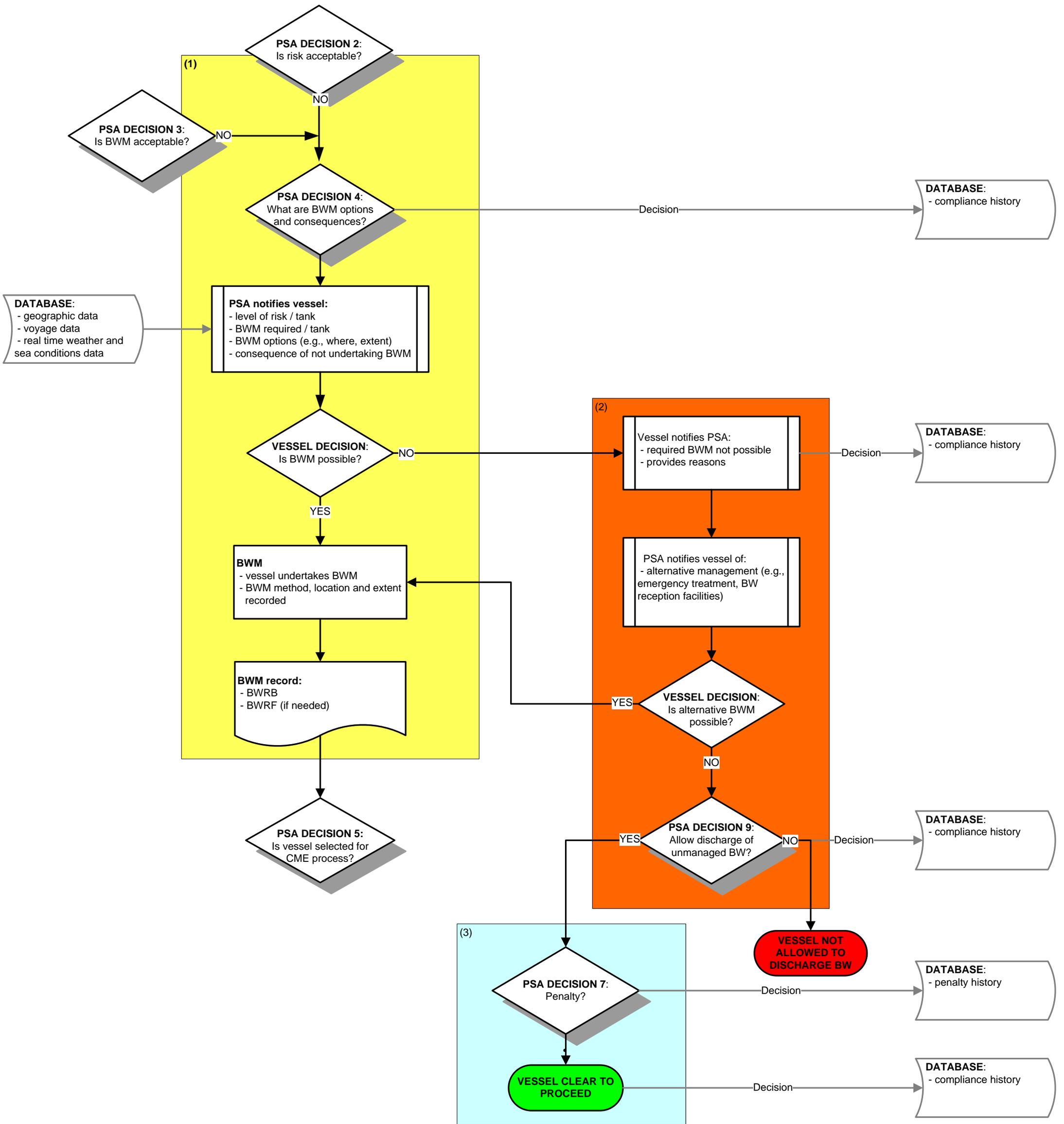


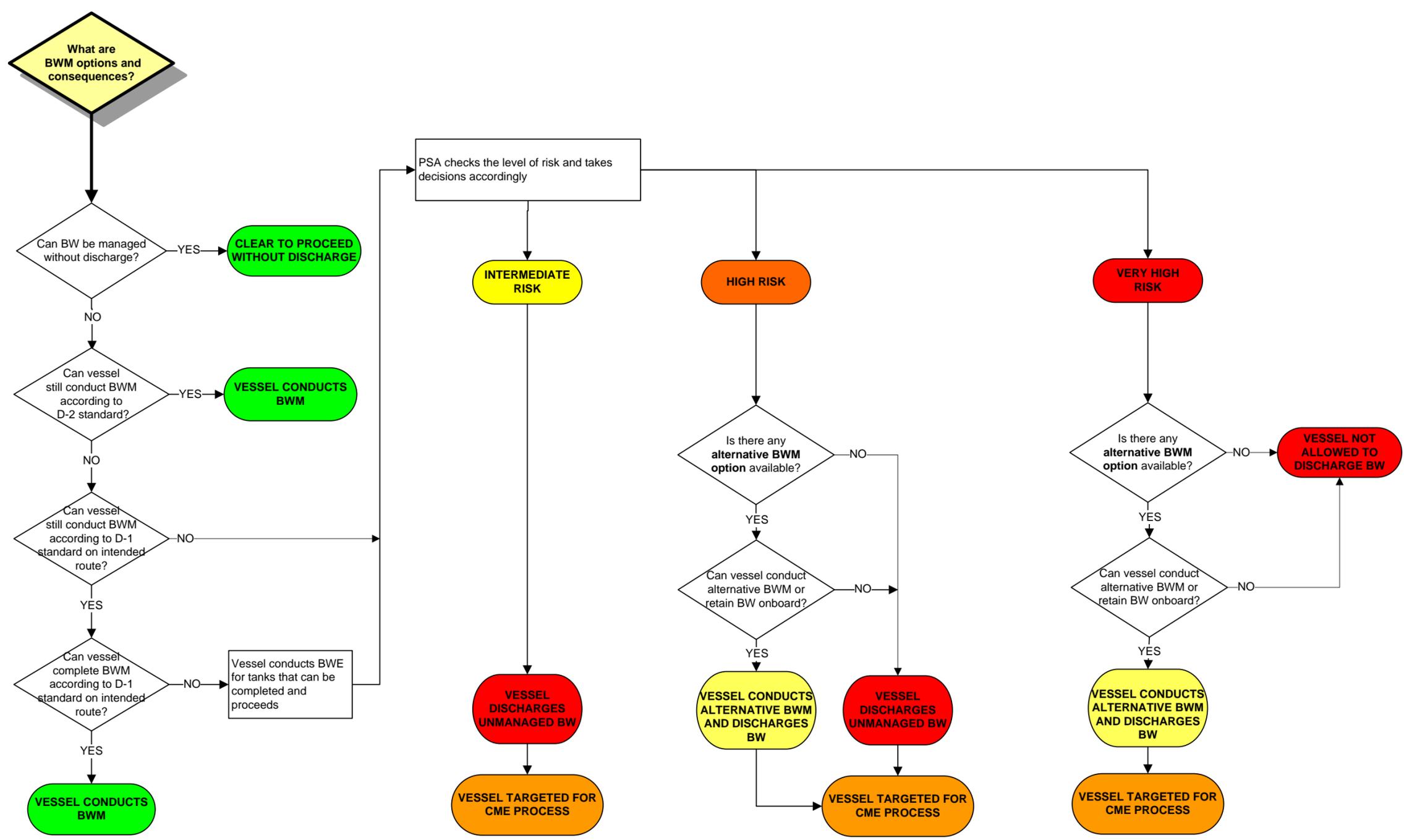
YES

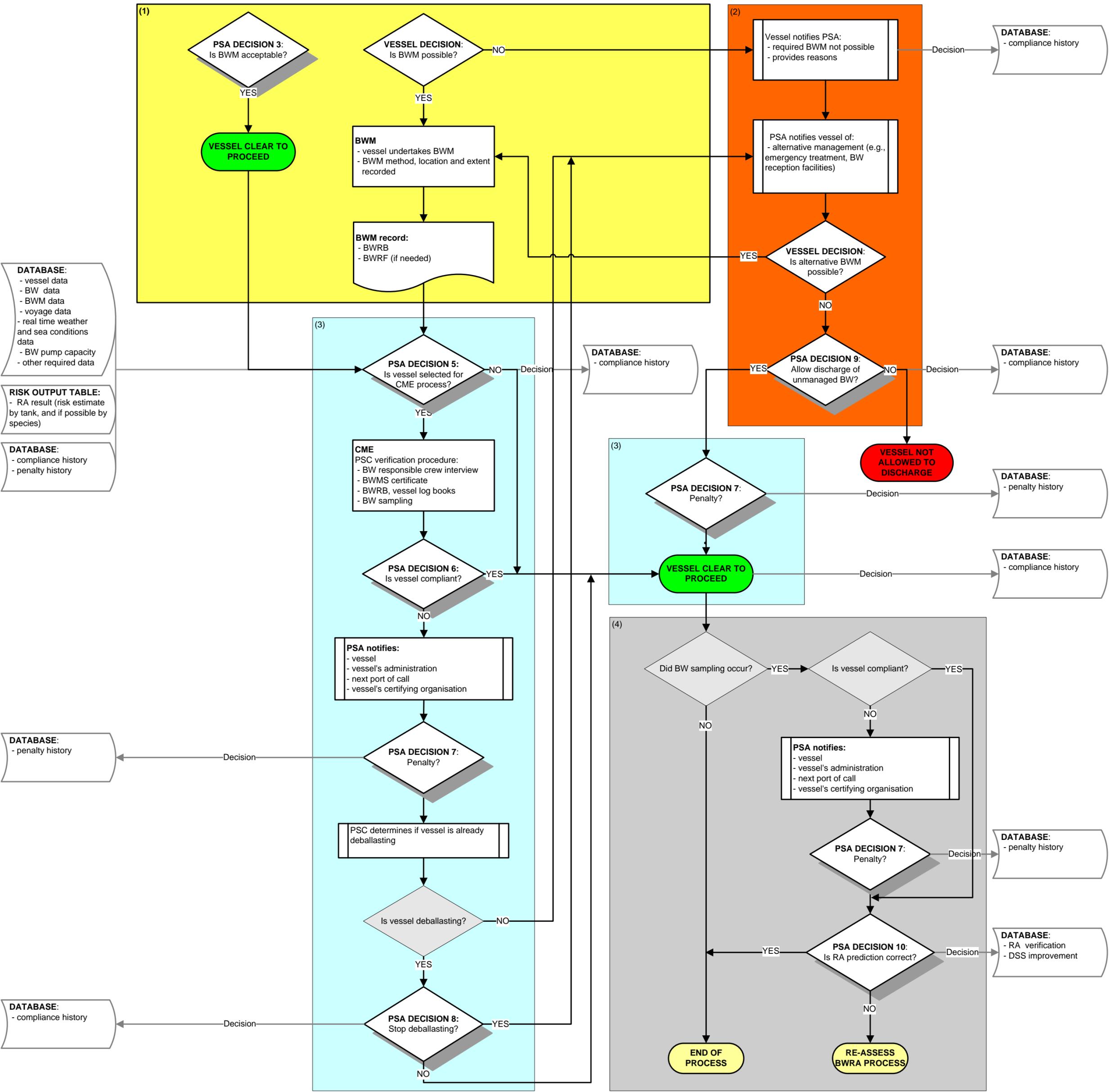
NO

Proceed to **NO**

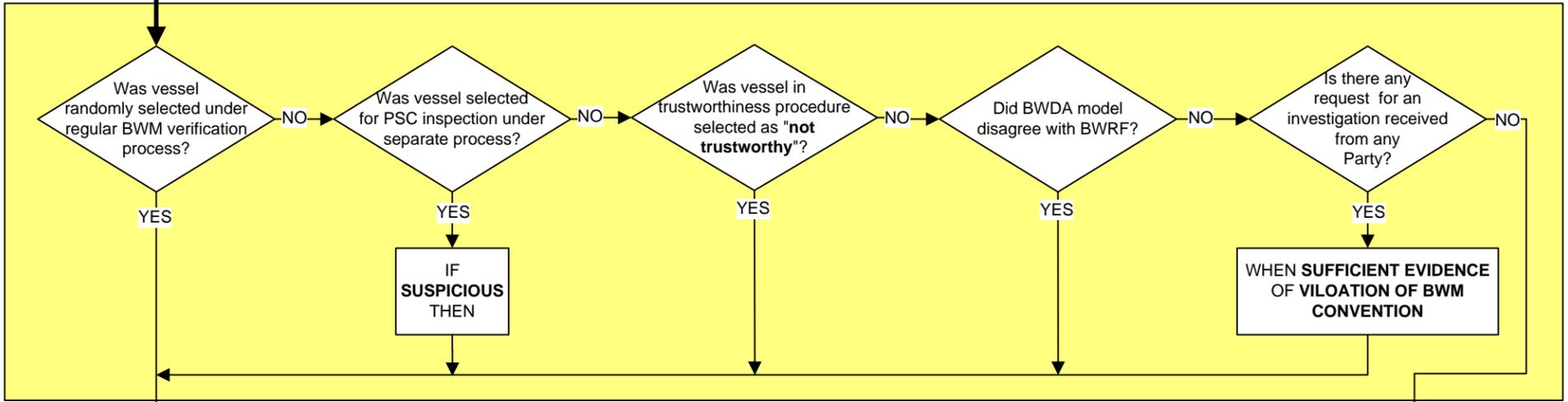
Proceed to **YES**







PSA DECISION 5:
Is vessel selected for CME process?



Proceed to **YES**

INITIAL INSPECTION

PSC inspection process as appropriate:
- interview master and BWM responsible crew
- verify validity of IBWMS certificate
- verify BWRB
- BWS for D-1 or D-2 (indicative and/or detailed)

Is vessel carrying valid IBWMS certificate?

NO

YES

Clear grounds that condition of vessel or equipment don't correspond with IBWMS certificate?

NO

YES

Clear grounds that master and crew are not familiar with BWM procedures or have not implemented these?

NO

YES

Is vessel carrying properly filled BWRB?

NO

YES

Is there a designated Officer for BWM?

NO

YES

Proceed to **YES**

DETAILED INSPECTION

PSC inspection process as appropriate:
- interview master and BWM responsible crew
- inspection of all needed documents and log books
- inspection of vessel (BWMS)
- indicative BWS (without BW discharge)

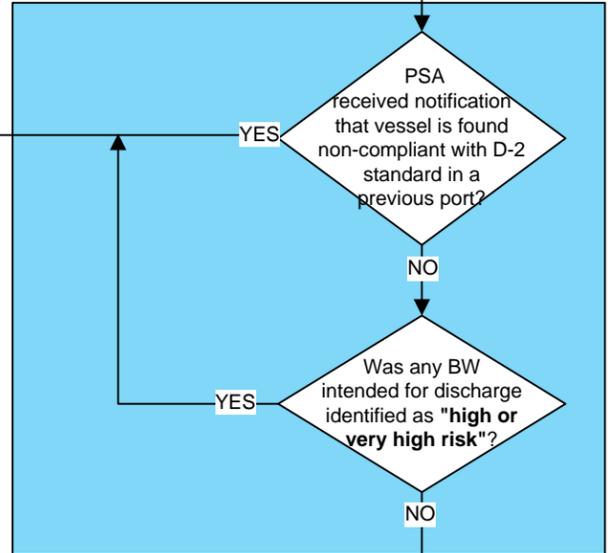
Vessel **SHALL NOT DISCHARGE BW** until compliance is confirmed.

YES

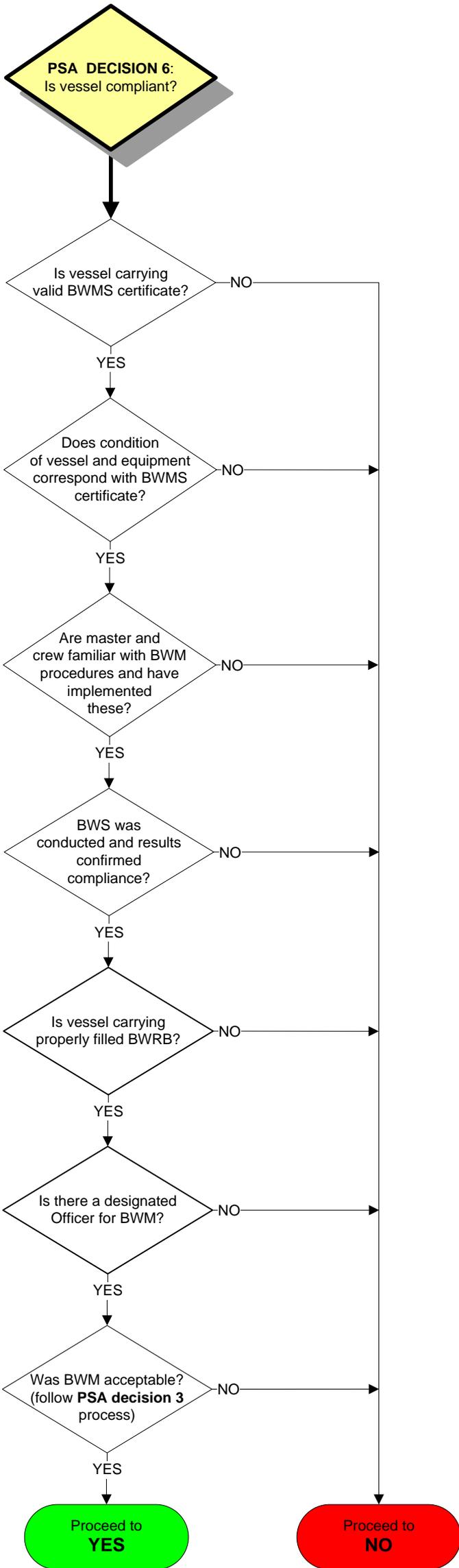
BWS was conducted and results indicated or confirmed non-compliance?

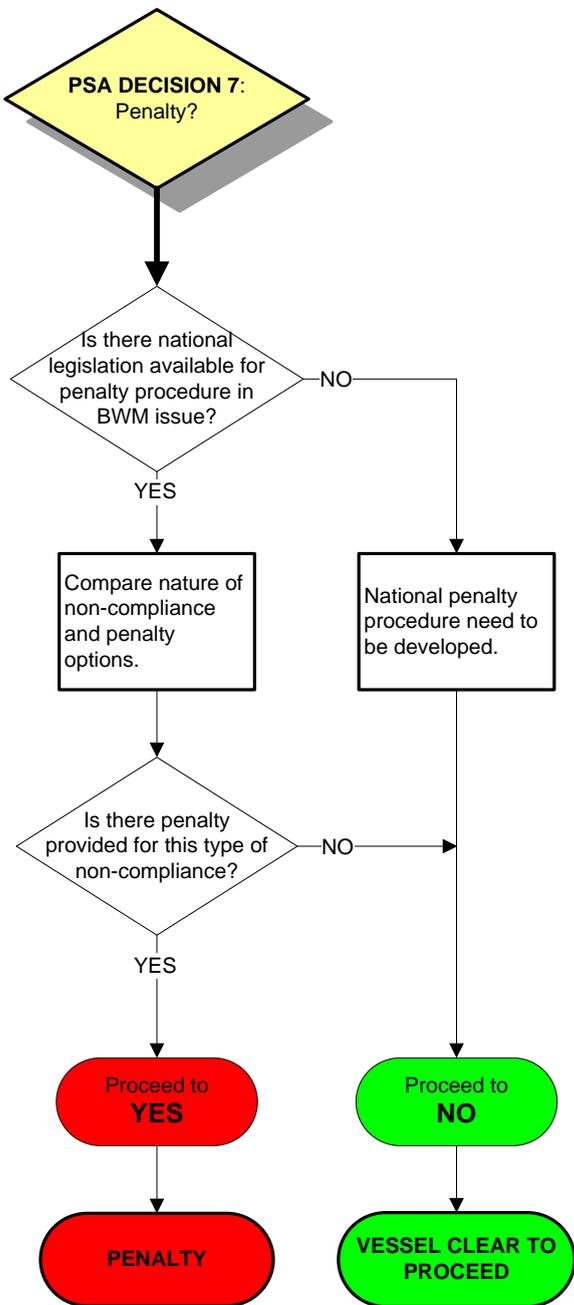
NO

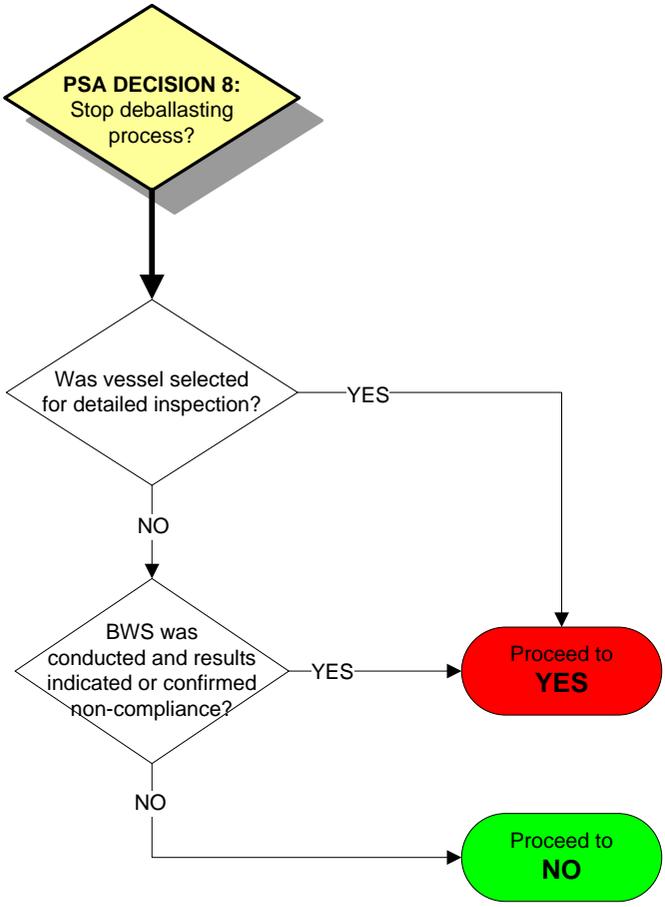
Vessel is **CLEAR TO PROCEED** until results from BWS analyses are obtained.

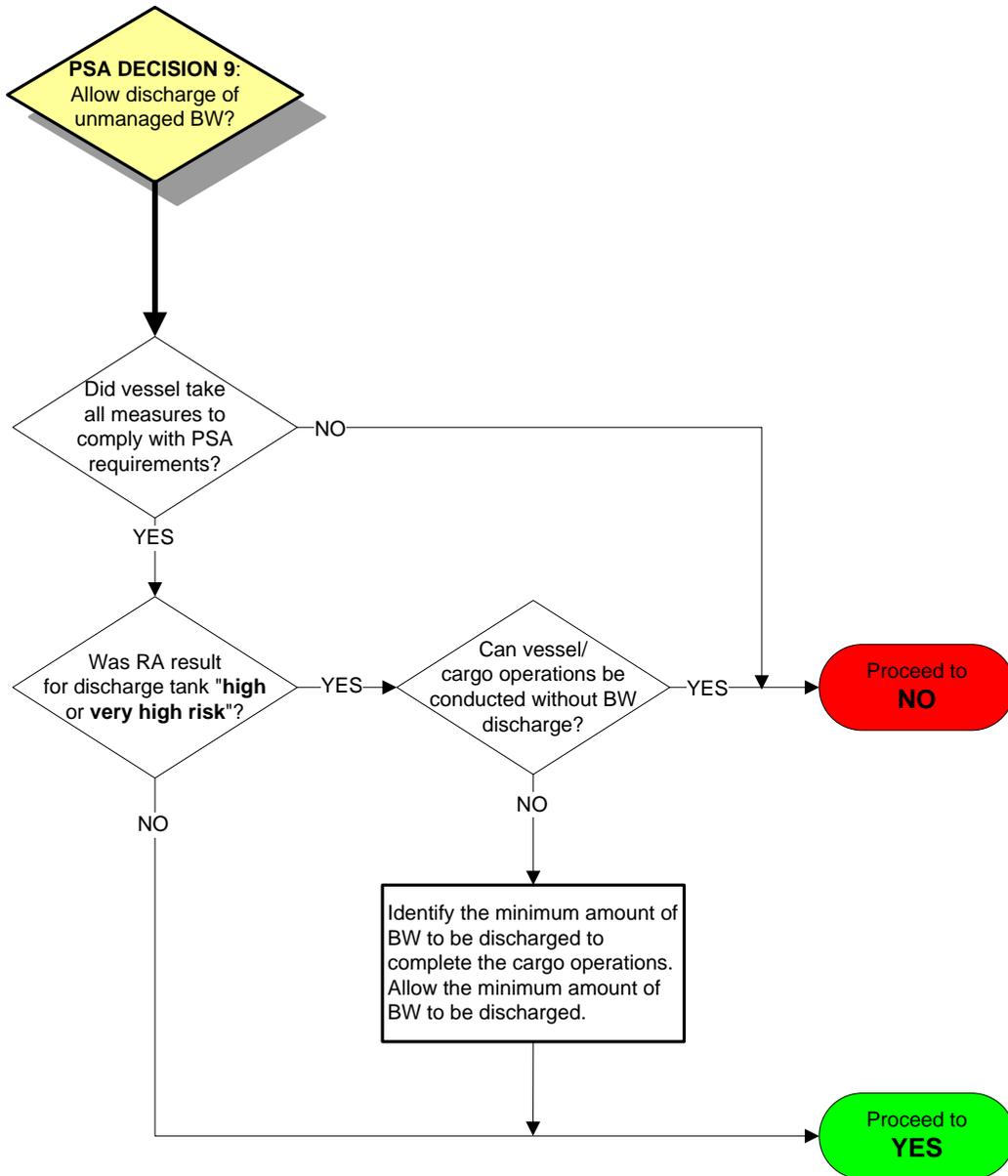


Proceed to **NO**









VESEL CLEAR TO PROCEED

Decision

DATABASE:
- compliance history

(4)

Did BW sampling occur?

YES

Is vessel compliant?

YES

NO

PSA notifies:
- vessel
- vessel's administration
- next port of call
- vessel's certifying organisation

PSA DECISION 7:
Penalty?

Decision

DATABASE:
- penalty history

PSA DECISION 10:
Is RA prediction correct?

Decision

DATABASE:
- RA verification
- DSS improvement

NO

END OF PROCESS

RE-ASSESS BWRA PROCESS

YES

NO

PSA DECISION 10:
Is RA prediction correct?

