PROPOSED FARM MACHINERY STORE AT
AT ELM TREE FARM, MILL DROVE NORTH, COWBIT
FOR MR P AND MRS R BOWMAN

DRAINAGE STRATEGY

1 PLANNING PERMISSION WAS GRANTED FOR THE ABOVE ON 17TH MAY 2021 REF H16-0294-21 WITH CONDITION 3 REQUIRING DETAILS ON STORM WATER DISPOSAL

2 ACCORDING TO SHDC STRATEGIC FLOOD RISK ASSESSMENT REV 2 DATED FEB 2017 THE SITE/ AREA IS AT RISK FROM FLOODWATERS TO A DEPTH OF BETWEEN 0.0 AND 0.25 METRES FOR THE YEAR 2115

3 THE DWELLING ATTATCHED TO THE FARM HAS ITS FLOOR LEVEL SUBSTANTIALLY ABOVE THESE PREDICTED FLOOD WATER LEVELS

4 THE FARM BUILDINGS ALSO HAVE RAISED FLOOR LEVELS IN RELATION TO THE GENERAL GROUND LEVELS. THIS NEW BUILDING WILL HAVE ITS FLOOR LEVEL APPROXIMATELY 50 mm HIGHER THAN THE EXISTING GENERAL PURPOSE FARM BUILDING AND APPROXIMATELY 400 mm HIGHER THAN THE ADJOINING ARABLE FIELD TO THE WEST

5 THE GROUND LEVELS SURROUNDING THE BUILDINGS AND NEW PONDS HAVE ALSO BEEN RAISED

6 EXISTING DRAINAGE SYSTEM

A - ROOF STORM WATER PIPED INTO POND A

B - ROADS OVER EDGE DRAINAGE

C - ENCLOSED YARD AREAS DRAIN INTO CHANNELS WHICH IN TURN DISCHARGE INTO TRAPPED GULLIES WHICH THEN CONNECT INTO THE SAME PIPED SYSTEM THAT DISCHARGES INTO POND A

D - PONDS A AND B HAVE THEIR LOWER LEVELS LINED SO AS TO ENSURE ADEQUATE WATER REMAINS IN THE PONDS NOT ONLY FOR DECORATIVE REASONS BUT ALSO FOR THE HEALTH/WELL BEING OF THE AQUATIC LIFE

E - WHEN WATER LEVELS RISE ABOVE THE LEVEL OF THE LINER THE EXPOSED PERIMETER OF PONDS (183 LINEAR METRES) ACTS AS A SOAK AWAY AND AS AN ADDITIONAL SAFETY MEASURE THERE IS AN OVERFLOW INTO THE SITES ORIGINAL POND ON THE WESTERN BOUNDARY

F - FROM THE LEVELS SHOWN ON SITE PLAN AS EXISTING 3515-1 REVISION B IT IS READILY EVIDENT FROM LEVELS IN THE DYKES ON BOTH SIDES OF MILL DROVE NORTH, THE WATER LEVEL IN THE ORIGINAL POND ON THE WEST BOUNDARY, WATER LEVELS IN POND A AND B ALONG WITH GROUND LEVELS AROUND THESE PONDS THAT THERE IS PLENTY OF STORAGE CAPACITY AVAILABLE

G - TO DATE THE APPLICANTS HAVE NOTED RAISED WATER LEVELS IN PONDS A AND B IN PERIODS OF INCLEMENT WEATHER AND IN PERIODS OF GOOD WEATHER A DROP IN LEVELS, 15-06-2021 DUE TO EVAPORATION THE TOP OF LINER WAS EXPOSED. TO DATE THE APPLICANTS HAVE NOT EXPERIENCED ANY FLOODING

H - THE APPLICANTS HAVE PONDS A AND B STOCKED WITH FISH AND TO DATE THERE HAVE NOT BEEN ANY INCIDENTS RELATING TO POLLUTION

7 WHILST SURVEYING THE SITE IN DECEMBER 2020 NO WATER WAS EVIDENT IN IN THE ROADSIDE DYKE TO THE WESTERN SIDE OF MILL DROVE NORTH

8 WHILST TAKING LEVELS JUNE 2021 THE DYKE ON THE EASTERN SIDE OF MILL DROVE NORTH WAS NOTED AS BEING DRY

9 AS ALL STORM WATER IS CONTAINED ON SITE THERE IS NO RISK OF FLOODING ELSEWHERE

10 IT IS PROPOSED TO SPLIT THE ADDITIONAL STORM WATER FROM NEW DEVELOPMENT

11 ROOF STORM WATER - FOOTPRINT 417.3 m^2 IT IS PROPOSED TO DISCHARGE THIS DIRECTLY INTO POND B VIA APPROXIMATELY 50 LINEAR METRES OF TRENCH SOAKAWAY.
AS A GENERAL GUIDE 3 NO 1m x 1m SOAKAWAYS ARE PROVIDED FOR A DWELLING WITH A FLOOR AREA OF 100 m^2 SO THIS EQUATES TO 33 m^2 OF FLOOR AREA TO 1 m^2 OF SOAKAWAY BED.
THE TRENCH SOAKAWAY FOR THE PROPOSED BUILDING WILL PROVIDE 30 m^2 OF SOAKAWAY BED WHICH WILL EQUATE TO 13.9 m^2 OF FLOOR AREA TO 1 m^2 OF SOAKAWAY BED.
DUE TO RAISED FLOOR LEVELS AND SURROUNDING GROUND LEVELS THIS NEW TRENCH SOAKAWAY WILL BE THAT MUCH HIGHER THAN THE WATER TABLE THUS PROVIDING A MORE EFFICIENT SOAKAWAY ACTION. DUE TO THE SOAKAWAY BED RATIO AND RAISED BED OF THE SOAKAWAY IT IS EXPECTED THAT NO ROOF STORM WATER WILL ACTUALLY DISCHARGE OUT OF THIS NEW PIPE

12 YARD STORM WATER - THE ADDITIONAL 405 m^2 OF IMPERVIOUS YARD AREA WILL DISCHARGE INTO POND A VIA EXISTING DRAINAGE CHANNEL, TRAPPED GULLIES AND STORM PIPEWORK
IN PREVIOUS INDUSTRIAL WORK FOR THE APPLICANT THE S.H.I.D.B HAVE REQUESTED 105 LITRES OF STORAGE CAPACITY / RETENTION FOR EVERY 1 m^2 OF IMPERVIOUS AREA (WHICH INCLUDES ALLOWANCE FOR CLIMATE CHANGE)

405 x 0.105 = 42.525 m^3 OF ADDITIONAL STORAGE REQ'D

POND SURFACE AREA OF APPROXIMATELY 900 m^2 SO THIS WILL RESULT IN 42.525 ÷ 900 = 47mm OF DEPTH OF ADDITIONAL WATER STORAGE REQUIRED.

∴ TO MINIMISE POSSIBILITY OF WATER ENTERING OVERFLOW AND INTO ORIGINAL POND RAISE LEVEL OF WEIR BETWEEN POND A AND B PLUS LEVEL OF OVERFLOW INTO ORIGINAL POND BY 50mm

13 A - PRIOR TO SUBMITTING THIS CONDITION COMPLIANCE APPLICATION CONTACT WAS MADE WITH SHDC PLANNING DEPARTMENT TO ASCERTAIN LEVEL OF INFORMATION REQUIRED. THE PLANNING DEPARTMENT REFERRED AGENT TO THE S.H.I.D.B

B - CONTACT MADE WITH S.H.I.D.B, THE AUTHOR OF THE I.D.B RESPONSE TO THE APPLICATION PHILIPPA NOON STATED THE I.D.B COMMENTS WERE ADVISORY (NOT BINDING) AND THAT I SHOULD CONTACT LINCOLNSHIRE COUNTY COUNCIL AS THEY ARE THE LEAD AUTHORITY ON DRAINAGE ISSUES. THE DRAINAGE RATIONALE WAS EXPLAINED TO PHILIPPA WHO AGREED IF NOT CAREFUL CAN OVERKILL AND THAT THE I.D.B WOULD LIKE TO SEE COPY OF INFORMATION TO BE SUBMITTED EVEN THOUGH L.C.C IS THE LEAD AUTHORITY.

C - CONTACT MADE WITH L.C.C, SPOKE WITH DEAN WHITEHEAD, JON SHARPE ACTUALLY DEALT WITH THE ORIGINAL PLANNING APPLICATION AND THAT HE HAD NO OBJECTION TO THE PROPOSAL.

14 AS STATED IN ITEM 6F THERE IS PLENTY OF SPARE STORAGE CAPACITY AVAILABLE. IF WE TAKE LOWEST GROUND LEVEL AROUND PONDS A AND B 2.241 MINUS WATER LEVEL OF 1.647 = 0.595 METRES MINUS SAY 0.075 METRES FOR WATER THAT HAS EVAPORATED = 0.520 METRES DEPTH OF WATER AVAILABLE TIMES BY POND AREA OF 900 m^2 = 468 m^3 OF ADDITIONAL WATER STORAGE AVAILABLE IF RAISE LEVEL OF OVERFLOW ACCORDINGLY.
ITEM 12 S.H.I.B.B ASK FOR 0.105 m^3 OF STORAGE FOR EVERY 1 m^2 OF IMPERMEABLE AREA

468 m^3 ÷ 0.105 = 4457 m^2

SO WITHOUT SOAKAWAY ACTION BEING INCLUDED PONDS A AND B CAN TAKE STORM WATER RUN OFF FROM ADDITIONAL 4457 m^2 OF IMPERVIOUS AREA MINUS PRESENT PROPOSAL OF 405 m^2 = 4052 m^2 (SPARE)
THIS FIGURE ALSO DOES NOT TAKE INTO ACCOUNT VOLUME CREATED BY GENTLY SLOPING BANKS TO THE PONDS NOR THE VOLUME OF THE ORIGINAL POND ON THE SITE.

SO IN CONCLUSION EXISTING DRAINAGE SYSTEM IS CAPABLE OF TAKING ADDITIONAL LOADING BY RAISING LEVEL OF WEIR AND OVERFLOW