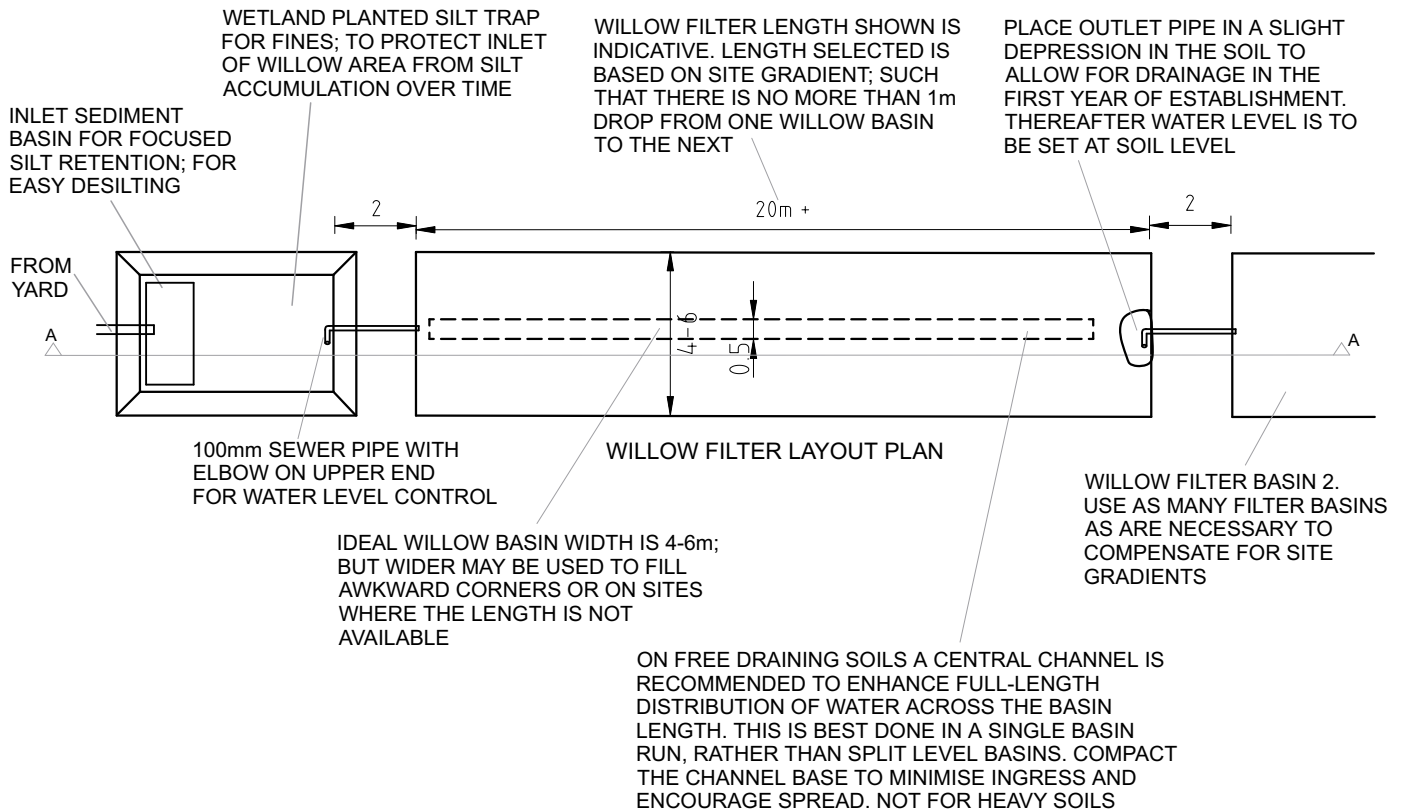
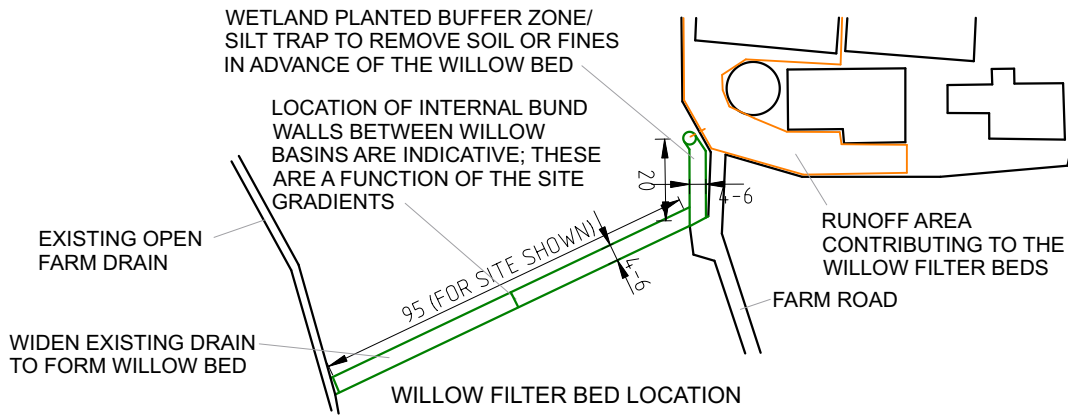


Farmscale Willow Filter Bed for Clean Yard Runoff, Roof Surfaces and Farm Roads for use with Variable Soil Infiltration Rates

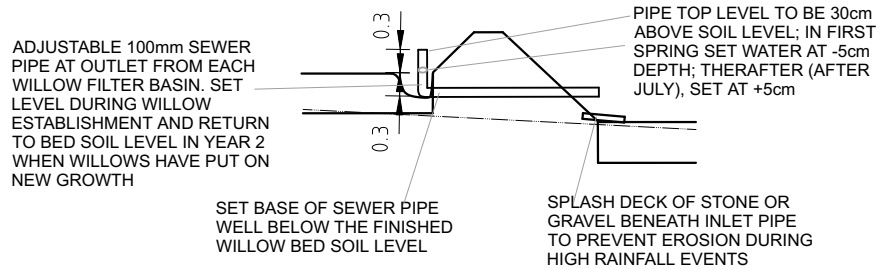
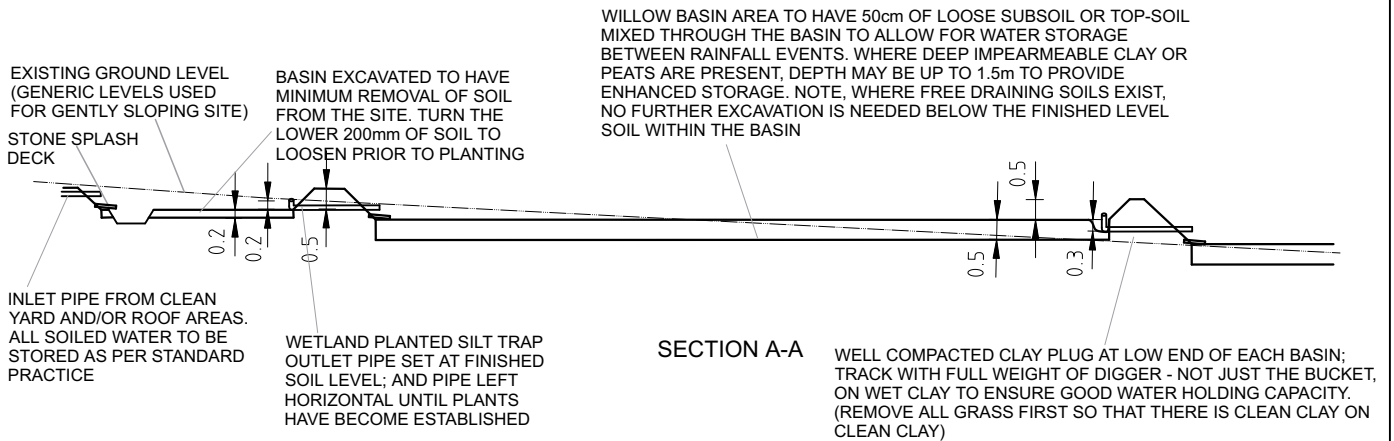


Farm Scale Willow Bed Layout
and Construction Detail - 1 of 4

FH Wetland Systems Ltd.

Knocknaskeagh, Lahinch, Co. Clare
www.wetlandsystems.ie
Tel. 065-7075631
e-mail: reeds@wetlandsystems.ie

Drawing dated 2Mar26



WILLOW BED OUTLET DETAIL

CONSTRUCTION NOTES FOR WILLOW FILTER BASINS

1. REMOVE TOPSOIL SCRAW (PLANTS AND ROOTS) AND SET TO ONE SIDE FOR REUSE IN THE BASE OF THE WILLOW FILTER. REMOVED REMAINING TOPSOIL AND SET TO ONE SIDE FOR REUSE IN THE BASIN.
2. MOULD THE SUBSOIL TO THE REQUIRED LAYOUT. ALLOW FOR A MAXIMUM DROP OF 1m BETWEEN BASINS; AND USE INTERNAL BUND WALLS TO DIVIDE THE AREA AVAILABLE INTO SEPARATE BASINS WHERE GRADIENTS REQUIRE IT.
3. TRACK BACK AND FORTH OVER MOIST CLAY FOR ALL MADE GROUND. THIS IS MORE EFFECTIVE THAN SIMPLY COMPACTING WITH THE BUCKET OF THE DIGGER. IT IS IMPORTANT THAT ALL WATER REMAINS IN THE WILLOW BASIN UNTIL IT REACHES THE FINAL OUTLET POINT AND DOES NOT SPILL OUT OVER THE FIELD OR OTHER AREA.
4. DIG OUT THE WILLOW FILTER BASIN TO A DEPTH OF 1m.
5. REPLACE TOP SCRAW (UPPER AREA OF TOPSOIL) INTO THE BASE OF THE WILLOW FILTER. REPLACE LOOSE SUBSOIL OVER THIS. FINALLY REPLACE THE WEED-FREE TOPSOIL ACROSS THE UPPER LEVEL OF THE WILLOW BASIN.
6. SEED PERIMETER EMBANKMENTS WITH GRASS/CLOVER MIX OR A NATIVE IRISH WILDFLOWER MIX TO MINIMISE RAINFALL EROSION OF THE BANKS.
7. LET OUTLET PIPES HORIZONTAL TO ALLOW FREE FLOW OF WATER THROUGH THE BASINS. THIS MAY BE RAISED ONLY AFTER THE WILLOWS HAVE BECOME WELL ESTABLISHED - EITHER IN APRIL OF YEAR 2, OR EARLIER IF NEEDED TO HOLD A BIT MORE MOISTURE DURING A DRY SUMMER IN YEAR 1.
8. KEEP THE WILLOWS WEED-FREE IN YEARS 1 AND 2. THERAFTER THE WILLOW GROWTH WILL KEEP WEEDS DOWN. DO NOT USE HERBICIDES, WHICH CAN BE READILY ABSORBED BY THE WILLOW STEMS EVEN IN WINTER, KILLING YOUR WILLOWS.
9. FOLLOW PLANTING AND COPPING NOTES ON THE PLANTING LAYOUT DRAWING.

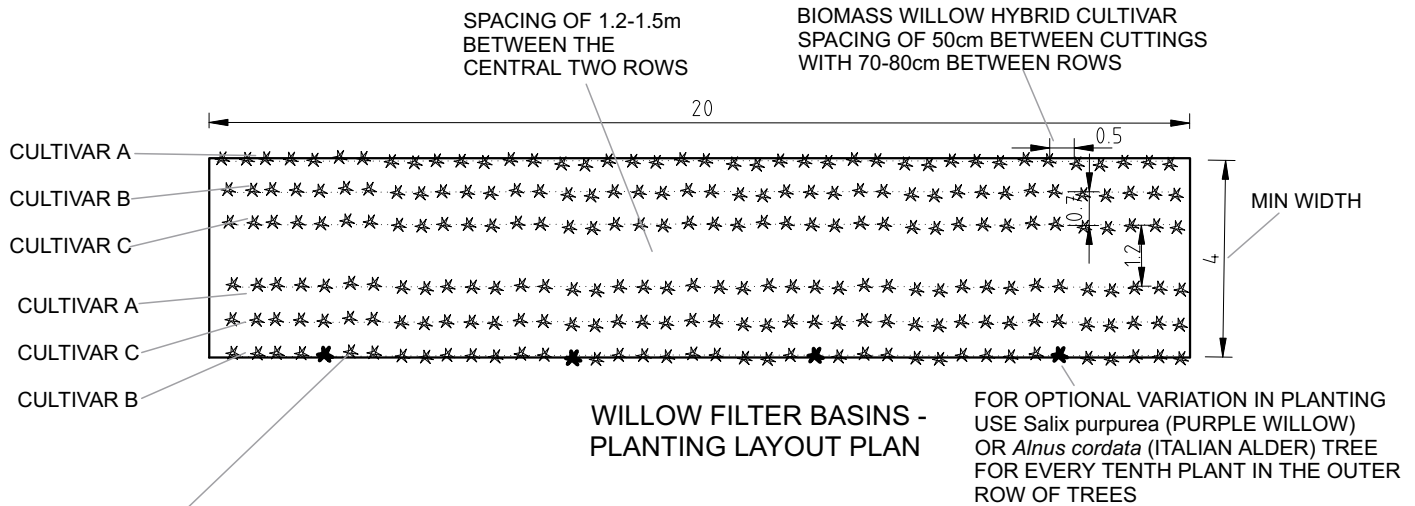
Farm Scale Willow Bed Section
Details - 2 of 4



FH Wetland Systems Ltd.

Knocknaskeagh, Lahinch, Co. Clare
www.wetlandsystems.ie
Tel. 065-7075631
e-mail: reeds@wetlandsystems.ie

Drawing dated 2Mar26



PLANT THE SIX ROWS OF WILLOW CUTTINGS BETWEEN FEBRUARY AND JUNE WITH AT LEAST 3 DIFFERENT CULTIVAR TYPES. SUITABLE CULTIVAR VARIETIES OF *Salix viminalis* MAY INCLUDE JORA, TORR BJORN, SVEN, INGER, TORHILD, TORDIS OR OTHER NAMED BIOMASS HYRIDS. DO NOT USE NATIVE WILLOWS OR BASKET WILLOWS SINCE THE GROWTH AND EVAPOTRANSPIRATION RATES WILL BE LESS EFFECTIVE THAN THE CULTIVATED VARIETIES

WILLOW BED PLANTING NOTES

LOWER ANY HEDGE LINES WITHIN 5m OF THE WILLOW FILTER TO MAXIMISE THE EXPOSURE TO LIGHT AND WIND TO MAXIMISE EVAPOTRANSPIRATION AND EFFLUENT UPTAKE. KEEP MAINTAINED ON AN ONGOING BASIS.

WILLOW TREES ARE TO BE COPPICED ON A 3-YR ROTATION BASIS AS SET OUT BELOW:

1st FEBRUARY AFTER PLANTING: CUT BACK ALL TREES TO 150mm ABOVE BED LEVEL TO ENCOURAGE STEM DEVELOPMENT.

2nd FEBRUARY AFTER PLANTING: LEAVE ALL WILLOWS UNCUT.

3rd FEBRUARY AFTER PLANTING: CUT BACK ALL THREE ROWS ON ONE SIDE OF THE FILTER AREA TO 100mm ABOVE THE PREVIOUS CUT.

4th FEBRUARY AFTER PLANTING: CUT BACK ALL THREE ROWS ON THE OTHER SIDE OF THE FILTER AREA TO 100mm ABOVE THE PREVIOUS CUT.

5th FEBRUARY AFTER PLANTING: LEAVE ALL WILLOWS UNCUT.

6th FEBRUARY AFTER PLANTING: REPEAT CYCLE FROM 3rd YEAR.

COPPICING MAY BE CARRIED OUT WITH A LOPPERS OR BRUSH CUTTER OR TRACTOR MOUNTED HEDGE CUTTER. REMOVE CUT TREES FROM THE AREA AND STORE AWAY FROM DRAINS TO PREVENT RE-ENTRY OF NUTRIENTS INTO WATERCOURSES. TIMBER MAY BE CHIPPED OR LOGGED FOR FUEL, USED AS A WILDLIFE HABITAT LOG-PILE, OR FOR LANDSCAPING.

NOTE THAT IF FIREWOOD IS DESIRED, LEAVE CUTTINGS TO GROW FOR 5 YEARS RATHER THAN 3, AND ALLOW CUT LENGTHS TO DRY FOR 2 YEARS PRIOR TO LOGGING FOR FIREWOOD.

Willow Bed and Wetland Silt Trap
Planting Details - 3 of 4



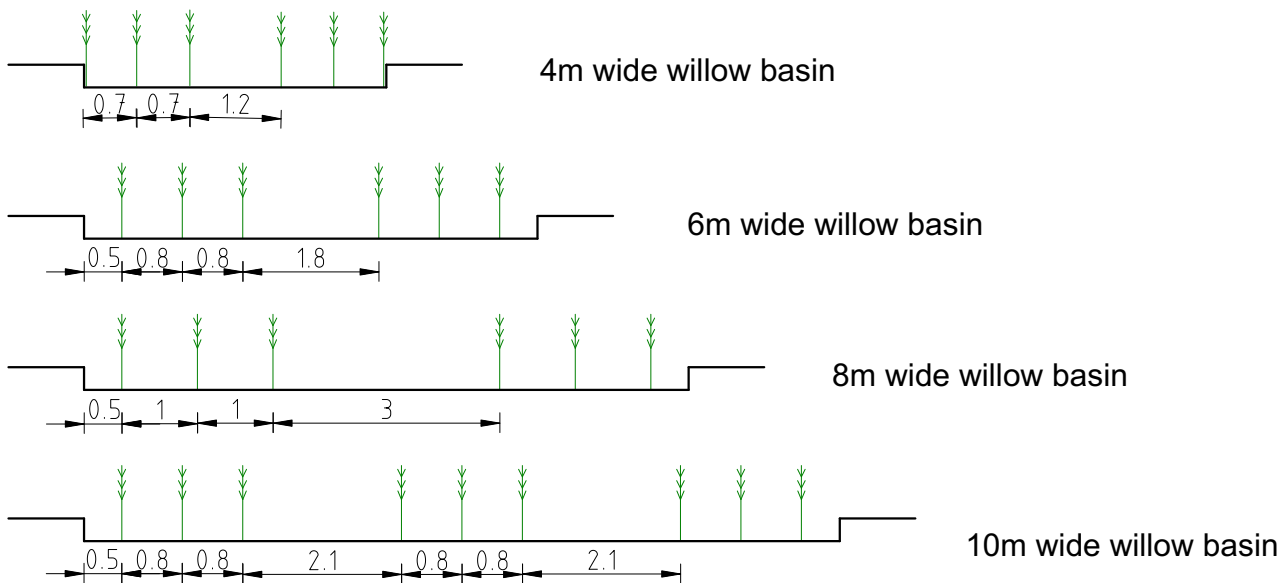
FH Wetland Systems Ltd.

Knocknaskeagh, Lahinch, Co. Clare
www.wetlandsystems.ie
Tel. 065-7075631
e-mail: reeds@wetlandsystems.ie

Drawing dated 2Mar26

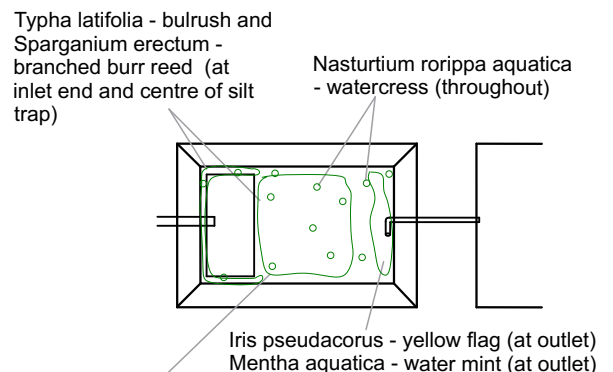
Willow Basin Spacing for Farm-Scale Willow Beds of Varying Widths

Allow standard spacing of 0.5m between willows within each row. Section drawings here show spacing between rows for different basin widths.



PLANTING NOTES FOR WETLAND PLANTED SILT TRAP

1. PLANTING SHOULD BE CARRIED OUT IN THE SPRING, PRIOR TO OR APPROACHING THE GROWING SEASON; AND USUAL PLANT CARE ADHERED TO.
2. THE WETLAND AREA(S) SHOULD BE PLANTED WITH LARGE GROUPS OF SINGLE SPECIES OF TALL EMERGENT SPECIES TO PREVENT THE DOMINANT SPECIES COVERING THE WHOLE AREA. PLANT SPECIES LISTED ARE INDICATIVE AND MAY BE AMENDED WITHIN CERTAIN LIMITS.
3. THE MAIN TALL PLANTS SHOULD BE PLANTED AT c.0.7m SPACING IN BASIN 1, AND MAY BE MORE SPARSE THEREAFTER IF SUBSEQUENT BASINS ARE TO BE USED. SEEDING MAY ALSO BE USED, BUT WILL TAKE LONGER TO BECOME ESTABLISHED.
4. GROUND COVER SHOULD BE ESTABLISHED AS SOON AS POSSIBLE AFTER TOP-SOIL REPLACEMENT ON BANKS. USE GRASS/CLOVER MIX OR NATIVE IRISH WILDFLOWER SEED SUCH AS FROM WILDFLOWERS.IE .
5. ENSURE THAT TREES (OTHER THAN WILLOWS IN THE WILLOW FILTER OR SMALLER HEDGEROW TREES) ARE NOT LESS THAN 4m FROM THE SILT TRAP TO PROTECT THE INTEGRITY OF THE CLAY LINED BASE. WEED OUT TREE SEEDLINGS IF FOUND.
6. WATER SHOULD BE KEPT JUST BELOW MARSH SOIL LEVEL UNTIL PLANTS ARE FIRMLY ROOTED AND GROWING WELL, TO PREVENT THEM FLOATING AWAY. A FEW WEEKS OF GROWING SEASON GROWTH SHOULD BE SUFFICIENT FOR ROOTED PLANTS. LONGER WILL BE NEEDED FOR SEEDED AREAS.
7. THE WATER LEVELS SHOULD BE SUFFICIENT TO KEEP THE MARSH SOIL MOIST. IF THE SYSTEM IS SHOWING SIGNS OF DRYING OUT, WATER WELL, WITH THE OUTLET FLOW CONTROL PIPE RAISED UP TO ENOUGH HOLD WATER AT BASE LEVEL.
8. FOR THE FIRST FULL YEAR, KEEP WATER LEVEL AT ≤10cm DEPTH. IN MAY OF YEAR 2, LEVELS MAY BE RAISED TO 20cm OPERATING DEPTH.



Essentially any tall, flat-leaved, emergent wetland plants are typically suitable for use in wetland planted silt traps or buffer zones. If these are present on the farm, harvest by hand and use in preference to buying in stock. Plants available from FH Wetland Systems if needed.

Willow Bed and Wetland Silt Trap
Planting Details - 4 of 4



FH Wetland Systems Ltd.

Knocknaskeagh, Lahinch, Co. Clare
www.wetlandsystems.ie
Tel. 065-7075631
e-mail: reeds@wetlandsystems.ie

Drawing dated 2Mar26